Journal of Business and Economics, ISSN 2155-7950, USA
June 2014, Volume 5, No. 6, pp. 871-895
DOI: 10.15341/jbe(2155-7950)/06.05.2014/012

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Constructing an Assessment for the Imbalance Theory of Foolishness

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Abstract: This research study sought to construct a valid and reliable assessment for the imbalance theory of foolishness (Sternberg, 2002, p. 111). This theory was first introduced in a chapter entitled "Smart People Are Not Stupid, But They Sure Can Be Foolish" (Sternberg, 2002, pp. 232-242). This theory builds upon the balance theory of wisdom (Sternberg, 1998) and contains six fallacies of thinking: unrealistic optimism, egocentrism, omniscience, omnipotence, invulnerability, and ethical disengagement (Sternberg, 2008b). Sternberg (2002) believed that foolishness was the result of people in positions of great power letting down their guard because of acquired dispositions, e.g., omniscience, omnipotence, and invulnerability. Jordan (2005a) argued that in organizational environments where power and status are highly valued, the "emphasis on gaining and retaining power and status is expected to prime those in such environments to develop fallacious ways of thinking about oneself and one's abilities" (p. 20). Power was assumed to predispose individuals to foolish thinking and behavior in this study. Scale development was initiated from an item pool of 150 questions (reduced to 56 items) generated from articles written by Sternberg and Jordan. Discussion includes introduction, rationale, definitions, hypothesis, participants, instrumentation, procedure, data analysis, results, discussion and suggestions for future research.

Keywords: imbalance theory of foolishness; fallacies of thinking; wisdom; scale development
JEL code: L20

1. Introduction

The imbalance theory of foolishness was first introduced in a chapter entitled "Smart People Are Not Stupid, But They Sure Can Be Foolish" (Sternberg, 2002, pp. 232-242). The theory builds upon the balance theory of wisdom (Sternberg, 1998) by viewing foolishness as the trait opposite of wisdom. Sternberg (2002) viewed foolishness as "an extreme failure of wisdom" (p. 236), which "occurs in the interaction between a person and a situation" (p. 233). Sternberg (2004) wrote, "The large majority of behaviors that we refer to as *stupid* are not stupid, as opposed to intelligent in the classical sense, but rather, foolish, as opposed to either practically intelligent or wise" (p. 146). Smart individuals may be led to commit foolish acts of behavior based on false beliefs (Sternberg, 2002, 2005a). Kessler and Bailey (2007) suggested that, perhaps, the most dangerous individuals around are "those who are exceptionally intelligent and creative but who lack wisdom" (p. 11).

Sternberg (2002) claimed, "The beginnings of foolishness lie in a defect in tacit knowledge" (p. 233). He defined tacit knowledge as "action-oriented knowledge, usually acquired without direct help from others, that allows individuals to achieve goals they personally value" (Sternberg, 2002, p. 233). Tacit knowledge is wedded

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to contexts and acquired through experience. Foolishness is acquired "from defects in reading the cues in the environment" (Sternberg, 2002, p. 234).

Sternberg (2005a) linked foolish thinking with foolish behavior. He suggested foolish behavior "is due largely, although not exclusively, to five fallacies of thinking. These fallacies resemble those [cognitive biases] we might associate with adolescent thinking, because they are the kind of thinking often seen in adolescents" (p. 338). The fallacies of thinking referenced were from Sternberg's (1998) balance theory of wisdom; namely, unrealistic optimism, egocentrism, false sense of omniscience, false sense of omnipotence, and false sense of invulnerability (Sternberg, 2003; 2004; 2005a; 2005b; 2005c). With the development of the imbalance theory of foolishness (Sternberg, 2002) a sixth fallacy was introduced—ethical disengagement.

Jordan (2005a), a former student of Sternberg, believed power and success could predispose an individual to foolish thinking and behavior. She stated that "the pursuit of power and status [could] lead one to fall prey to one, or several, of . . . the fallacies of thinking" (p. 20). In her dissertation, which investigated the relationship between business experience and moral awareness, Jordan (2005a) hypothesized that "those with greater experience may demonstrate poorer performance than novices . . . on the theory that the belief that one possesses more power and greater abilities than one realistically does will lead to poorer decision-making in some situations" (p. 20).

Jordan (2005a) developed a scale in her dissertation, as a secondary focus, for the five fallacies of thinking associated with the balance theory of wisdom (Sternberg, 1998). Her measure was known as the fallacies of thinking scale (FTS), which contained 62 items. Items on the FTS were derived using implicit theoretical methodology. Since the completion of Jordan's dissertation, no other scholarly works have used the FTS or amplified its work (J. Jordan, personal communication, July 22, 2010). Jordan acknowledged that the FTS was an initial developmental work and that it needed to be revised (J. Jordan, personal communication, July 22, 2010).

The six fallacies of thinking in the imbalance theory of foolishness (Sternberg, 2002) represent undesirable social characteristics. Unrealistic optimism, egocentrism, omniscience, omnipotence, invulnerability, and ethical disengagement (Sternberg, 2008a; 2008b; 2009b) are to be viewed as negative cognitive biases. The imbalance theory of foolishness had not been studied empirically (R. Sternberg, personal communication, June 13, 2010). After a thorough examination of the literature, we identified no previous empirical examination of the theory prior to the present study. The lone assumption in this study was that positions of great power could induce fallacious thinking, as Sternberg (2002) and Jordan (2005a) suggested. This study sought to advance research in the domain of wisdom and foolishness.

2. Rationale

Failures in leadership are inevitable. Even presidents of countries like the United States have suffered failure in leadership because they "are always feeling their way through" (Pious, 2008, p. 288). Lessons can be learned from catastrophic failures of leadership. Kilburg (2006) stated, "Every person in an executive role reaches toward wisdom, is expected to have wisdom, and wants to be wise. Unfortunately. . . all too often senior leaders fail in this central and most important task of their offices" (p. 22). Leaders can be derailed, meaning "*off the rails*—cannot proceed in [their] present jobs, just as a derailed train cannot continue on its intended path" (Irwin, 2009, p. 6). Five stages to derailment of a leader were suggested: (a) a failure of self-/other-awareness, (b) hubris, (c) missed early warning signs, (d) rationalizations, and (e) derailment (Irwin, 2009). Sanborn (2007) suggested that leaders are headed for impending failure when they ignore six early warning signs: (a) a shift in focus, (b) poor communication, (c) risk aversion, (d) ethics slip, (e) poor self-management, and (f) lost love.

Rooney and McKenna (2007) reported that wisdom is declining in management practice. The effects of such are being evidenced continuously by clouding judgment, degrading decision making, and compromising ethical standards amongst leaders. Rooney and McKenna suggested that "while most of us will never reach higher states of wisdom, we can all become wiser than we presently are" (p. 132). They have drawn this conclusion:

> Wisdom requires knowledge, but not necessarily a great accumulation of it. Wisdom is critically dependent on ethics, judgment, insight, intuition, creativity and other transcendent forms of human intellection. Wisdom is concerned less with how much we know and more with what we do and how we act. Wisdom is a fundamentally practical way of being in a complex and uncertain world. (Rooney & McKenna, 2007, p. 132)

Wisdom has historically been considered the pinnacle of human development, and achieving it has been thought to be the means and end to a good life (Baltes & Staudinger, 2000). Aristotle understood truth to emerge from five conditions: "art, scientific knowledge, practical wisdom (phronesis), philosophical wisdom (sophia), and intuitive reason" (Osbeck & Robinson, 2005, p. 67). Wisdom has blended the perfect and the practical, thereby uniting the height of knowledge and the utility of everyday life (Staudinger, Lopez, & Baltes, 1997). Wisdom has been "an abstract, highly valued, multidimensional human virtue" (Bluck & Glück, 2005, p. 87). Csikszentmihalyi and Rathunde (1990) revealed three dimensions to wisdom: a cognitive process, a virtuous guide to action, and a personal good orintrinsic reward. These dimensions have correlated well with the multidimensional picture of the wise person described by Chandler and Holliday (1990): (a) general competence, (b) practical knowledge, and (c) reflective skills (Csikszentmihalyi & Rathunde, 1990). Executive wisdom has been no different. Kilburg (2006) suggested that "Executive Wisdom is an emergent property of the incredibly complex set of structures; processes; and social, economic, political, and psychological contents in which every leader is immersed" (p. 22).

Jordan (2005b) suggested that wisdom is an "uncommon ability", even a "rare quality" (p. 163). Many have agreed that the concept of wisdom "is perhaps the most complex characteristic that can be attributed to individuals or cultures" (Birren & Svensson, 2005, p. 28). Even though the concept of wisdom has not emerged from a single trait (Birren & Fisher, 1990), it has appeared "to be a trait more readily applied to the elders in traditional or preliterate societies" (Birren & Svensson, 2005, p. 27). If wisdom were placed on a continuum, people could be wise or unwise in different situations of their life or organization (Rooney & McKenna, 2007). Wisdom is "critically dependent on ethics, judgment, insight, intuition, creativity and other transcendent forms of human intellection" (Rooney & McKenna, 2007, p. 132). Psychological models have differed in their emphasis regarding wisdom, as some models have stressed cognition, others personality, others social involvement, or some combination thereof (Staudinger et al., 1997).

Price (2004) asked the question, "Why do leaders fail ethically when it is so obvious to the rest of us how they should act?" (p. 130). Organizational leaders have been expected to show moral behavior and moral influence (Price, 2004), which includes their thinking. Ethical leadership has been about leading an organization to accomplish its mission and core purposes while staying within ethical means and behavior (Price, 2004). But, leadership has exaggerated cognitive challenges, and ethical failure has awaited leaders who do not recognize the dangers of faulty thinking (Price, 2004). Jordan (2005a) stated, "In domains of expertise where the attainment and retention of power and status are central concerns, the belief that one is the center of attention, all-knowing, all-powerful, uninhibited by potentially risky outcomes, and unsusceptible to negative results, may be commonplace" (p. 25). The presence and practice of foolish thinking may be a portion of the reasoning why leaders fail to make ethical decisions (Sternberg, 2002). Sternberg (2002) suggested that the pursuit of power and status may cause one to fall prey to the fallacies of thinking.

It is bothersome when leaders who possess wisdom, intelligence and creativity, exhibit foolish behavior. The lack of a referent peer group may be part of the problem for those at the highest levels of power and status within an organization. Jordan (2005a) wrote in her dissertation that research "has concluded that those at the top of the corporate hierarchy are less likely to look to others for clues to how to think and act because there are fewer 'others' on their same level to look to" (p. 25). Smart, intelligent and creative leaders that commit foolish mistakes may have internalized faulty cognitions, e.g., unrealistic optimism, egocentrism, sense of omniscience, sense of omnipotence, and a sense of invulnerability (Sternberg, 2005b). Leaders with unrealistic optimism "believe themselves to be so smart that . . . whatever they do, it will work out all right" (Sternberg, 2005c, p. 244). Leaders with high levels of egocentrism have lost sight of the interests of others and have ended up being very small-minded. Leaders with a sense of omniscience "become susceptible to remarkable downfalls because they act as experts in areas where they are not, and can make disastrous mistakes in doing so" (Sternberg, 2005c, p. 244). Leaders with a sense of omnipotence have lost sight of the limitations of their power. By acting more powerful than they really are, they have brought disaster upon themselves and their affiliates. Lastly, leaders with a sense of invulnerability believe they can do anything and get away with it. "They believe that either they are too smart to be found out or, even if found out, they will escape any punishment for misdeeds" (Sternberg, 2005c, p. 244).

Fallacies of thinking are cognitive biases that appear under stressful situations (Sternberg, 1998). They get in the way of leaders' thinking and acting ethically (Sternberg, 2009a). Internalization of these fallacies of thinking creates outcomes that resemble moral disengagement (Bandura, 1999). Jordan (2005a) stated, "These biases are found to be especially present in individuals faced with exceptionally stressful situations; however, they are also found in a more modest extent in individuals not facing such extreme circumstances" (p. 21). Jordan claimed that false beliefs make smart individuals commit foolish mistakes.

> The fallacies of thinking do not purport to serve those who possess them in cognitively-constructive or adaptive ways. The internalization of these fallacies is only believed to lead the possessor to make foolish mistakes because they influence him or her to ignore or overlook factors that would otherwise appear important to consider during decision-making. (Jordan, 2005a, p. 23)

3. Definitions

The thought that wisdom balances outcomes was crucial for Sternberg. "In wisdom, one certainly may seek good ends for oneself, but one also will seek good outcomes for others" (Sternberg, 2002, p. 237). Wisdom occurs in the interaction between a person and a situation. Sternberg (1998) wrote, "Because wisdom is in the interaction of person and situation, information processing in and of itself is not wise or unwise . . . [but] depends on the fit of a wise solution to its context" (p. 353). If wisdom constitutes a balance of interests, the opposite constitutes an imbalance. Like wisdom, foolishness occurs in the interaction between a person and a situation.

The definition of wisdom used for this research study was understood as a process that emerges in real-life contexts. It came from the balance theory of wisdom (Sternberg, 1998), which took an explicit theoretical approach to the study of wisdom. Explicit theories are constructions of expert theorists and researchers. Wisdom was defined as:

> The application of tacit knowledge as mediated by values toward the achievement of a common good through a balance among multiple (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments. (Sternberg, 1998, p. 347)

The imbalance theory of foolishness (Sternberg, 2002) views foolishness as the trait opposite of wisdom. Foolishness is thought to be a complete failure of wisdom, coming from a deficit in tacit knowledge (Sternberg, 2002). Foolishness was defined as:

> The faulty acquisition or application of tacit knowledge as guided by values away from the achievement of a common good, through a balance among intrapersonal, interpersonal, and extra personal interests of the short and long term, in order to achieve a balance among (1) adaptation to existing environments, (2) shaping of existing environments, and (3) selection of new environments. (Sternberg, 2002, p. 236)

Sternberg (2008a; 2008b; 2009b) has given definitions for the six fallacies of thinking associated with the imbalance theory of foolishness (Sternberg, 2002) several times. The definitions used in this research came from an article Sternberg (2008b) entitled "The WICS Approach to Leadership: Stories of Leadership and the Structures and Processes That Support Them". The six fallacies of thinking are defined below:

- The unrealistic-optimism fallacy: "When [successful leaders] think they are so smart and effective that they can do whatever they want" (p. 367).
- The egocentrism fallacy: "When successful leaders start to think that they are the only ones that matter, not the people who rely on them for leadership" (p. 367).
- The omniscience fallacy: "When leaders think that they know everything, and lose sight of the limitations of their own knowledge" (p. 367).
- The omnipotence fallacy: "When leaders think they are all-powerful and can do whatever they want" (p. 367).
- The invulnerability fallacy: "When leaders think they can get away with anything, because they are too clever to be caught; and even if they are caught, they figure that they can get away with what they have done because of who they imagine themselves to be" (p. 367).
- The ethical disengagement fallacy: "When a leader believes that ethics apply to others, but not to him or herself" (p. 367).

In this study, *power* referred to positional power, whereby "the status associated with one's position gives one power to influence those who are lower in status" (Bass & Bass, 2008, p. 267). Ford (1980) stated the power could be wielded crudely or subtlety in various ways: obtrusive or unobtrusive, overt or covert. The word *acquired* was used to mean not-genetic; a new or added characteristic as a result of interaction with the environment. And the word *disposition* referred to a semi-permanent trait-like tendency to do things in a certain way.

4. Hypothesis

One null hypothesis and its alternative were proposed for this study, which sought to construct an assessment for the imbalance theory of foolishness (Sternberg, 2002). In the development and validation of multi-item self-administered measures of unobservable, latent constructs, the focus is on whether the hypothesized factor model does or does not fit the data. The present research objective was to provide a way to determine whether data would support a hypothesized factor model for the imbalance theory of foolishness. The null hypothesis and its alternative were:

H_0: The model fits the data.

H_a: The model does not fit the data.

Smart, powerful people can be foolish (Sternberg, 2002) and intelligence does not protect against foolish thinking or behavior. These individuals may be led to commit foolish acts of behavior based on false beliefs

(Sternberg, 2002). It is believed that smart, powerful leaders who commit foolish acts have internalized negative cognitive biases.

5. Participants

The sample of respondents for the imbalance theory of foolishness assessment included 150 corporate leaders from across America, covering both for-profit and not-for-profit sectors. Jordan (2005a) thought the pursuit of power and status could lead some leader types to fall error to fallacious thinking; wherein, they commit one or more of the fallacies of thinking associated with imbalance theory of foolishness(Sternberg, 2002). Therefore, 150 CEO and senior-level leaders participated voluntarily in the research sample with the newly created imbalance theory of foolishness assessment. MarketTools, a research firm in San Francisco, administered the assessment through their online polling website called Zoomerang (2012). Since 1999, Zoomerang has been the industry leader in online surveys and polls with surveys that are easy, fast and flexible, and can be administered via email, the World Wide Web, Facebook, and Twitter (MarketTools, 2011). MarketTools guaranteed that 150 CEO and senior-level leaders would actually participate in the sampling. MarketTools made the following claim in reference to accessing high-quality survey respondents:

Easily reach deeply profiled, global survey respondents with MarketTools ZoomPanel, an online survey panel of more than 2.5 million people ready to take online market research surveys. Panelists are validated with MarketTools TruSample to provide the market research industry's first quality-assured sample (MarketTools, 2011).

6. Instrumentation

The scale development process in this research spanned more than a year and a half of time. The research method followed was outlined by MacKenzie, Podsakoff, and Podsakoff—see Appendix—with some ideas supported by Hinkin (1998). Steps were carefully monitored throughout the study to ensure that a valid and reliable assessment would be created for the imbalance theory of foolishness. A three-member panel of academic experts was utilized, as well as 23 students from a Midwestern (USA) university engaged in a doctorate in organizational leadership program. The sample of participants included 150 CEO and senior-level leaders who participated voluntarily from Zoomerang's (2012) online database, known as ZoomPanel.

The scale development process utilized in the creation of the imbalance theory of foolishness assessment began with establishing clear construct definitions. Emphasis was placed on content domain and the role of theory. Schriesheim, Powers, Scandura, Gardiner, and Lankau (1993) suggested "that the demonstration of instrument content adequacy be demanded as an initial step toward construct validation by all studies which use new, modified, or previously unexamined measures" (p. 385).

6.1 Validity Issues

Content validity. Content validity is an important piece of evidence in the evaluation of construct validity because a "test's content should reflect the full range of the core construct, no more and no less" (Furr & Bacharach, 2008, p. 173). This research study employed three academic experts, all of them with some understanding of wisdom and leadership issues, to help provide content validity. The panel of experts was asked to rate 150 questions—questions the researcher created—pertaining to the six dispositions of the imbalance theory of foolishness. It was assumed that the panel of experts would facilitate the design of better questions. Netemeyer, Bearden, and Sharma (2003) suggested the following:

> First, the researcher should have *all* elements of the items judged for face and content validity. The items themselves, the response formats, the number of scale points, and instructions to the respondent all should be judged for representativeness by using multiple expert and population judges via qualitative and quantitative procedures. (p. 102)

The panel of experts provided stability to the internal structure of the test, which is one facet of construct validity. Internal structure of the test refers to "the way that the parts of a test are related to each other" (Furr & Bacharach, 2008, p. 174). Whereas some tests include items that are highly correlated and other tests include items that can be arranged into two or more categories, "the actual structure of the test should match the theoretically based structure of the construct" (Furr & Bacharach, 2008, p. 174). The panel of experts in this research ensured that the actual structure of the assessment matched its theoretical structure, which was an important step in the content validity of the instrument. The six fallacies of the imbalance theory of foolishness were isolated and uniquely identifiable.

Face validity. Face validity is not absolutely necessary for construct validity from a psychometric perspective, but it has important implications (Furr & Bacharach, 2008). Face validity is the quality of a test which gives the appearance that a measure has validity (Netemeyer et al., 2003). Tests with high face validity are more well received and, therefore, useful to accurately assess an individual's psychological disposition. Netemeyer et al. (2003) claimed:

> A highly face valid instrument enhances its use in practical situations by (among other things) inducing cooperation of respondents via ease of use, proper reading level, clarity, easily read instructions, and easy-to-use response formats. [An instrument or test should appear practical, pertinent and related to the purposes of the instrument/test as well.] Thus, face validity may be more concerned with what respondents from relevant populations infer with respect to what is being measured. (pp. 12-13)

In order to help establish face validity with the assessment from this research, 23 doctoral students from a Midwestern university were asked to take the newly created survey. Questions that appeared to adequately represent the six fallacies of thinking were included on the version of the assessment that was given to the sample of respondents. Incorporating information from the students helped to strengthen the imbalance theory of foolishness assessment, as well as enhance its practicality.

6.2 Reliability Issues

Internal consistency reliability. At least three methods for estimating reliability have been created: alternate forms reliability, test-retest reliability, and internal consistency reliability (Furr & Bacharach, 2008). Reliability is a theoretical property of a test that cannot be computed directly. Of the three methods used for estimating reliability, the scale development process in this research used internal consistency reliability. Internal consistency reliability "has the practical advantage of requiring respondents to complete only one test at only one point in time" (Furr & Bacharach, 2008, p. 111). Most psychological tests have estimated reliability using this method.

> The fundamental idea behind the internal consistency approach is that the different "parts" of a test (i.e., items or groups of items) can be treated as different forms of a test. In many areas of behavioral science, the internal consistency approach is the most widely used method for estimating reliability. (Furr & Bacharach, 2008, p. 111)

Of the criteria used for assessing internal consistency, raw coefficient alpha (known as Cronbach's α) has been the most widely used in field studies. It is computed by most statistical software packages, e.g., SPSS (Furr & Bacharach, 2008). Osburn (2000) stated that Cronbach's coefficient α "is an appropriate reliability estimator for *composite* measures containing multiple components" (p. 343). Coefficient α is very flexible and appropriate for a

wide variety of circumstances and has been commonly used throughout psychology and many other disciplines.

7. Procedure

This research study was guided by steps advocated in the psychometric literature (Ghiselli, Campbell, & Zedeck, 1981; Hinkin, 1998; MacKenzie et al., 2011). An overview of the scale development process outlined by MacKenzie et al. (2011) is provided in the Appendix. The scale development process "involves a series of steps beginning with construct conceptualization and culminating in the development of norms for the scale" (MacKenzie et al., 2011, p. 296). Each step borrowed from the scale development process of MacKenzie et al. for this research will be discussed in more detail below.

Step 1: Develop a conceptual definition of the construct. The first step in the development and validation process of the assessment "involve[d] defining the conceptual domain of the construct[s]" (MacKenzie et al., 2011, p. 298). The work of defining the conceptual domain of the constructs for the imbalance theory of foolishness was completed by Sternberg (2002; 2003; 2004; 2005a; 2005b; 2005c; 2008a; 2008b; 2009a; 2009b), and further aided by Jordan (2005a).

Step 2: Generate items to represent the construct. After the focal constructs had been defined, the next step in the process was "to generate a set of items that fully represents the conceptual domain of the construct[s]" (MacKenzie et al., 2011, p. 304). More than 400 questions were generated to capture the six fallacies of thinking in the imbalance theory of foolishness. From these 400 questions, 150 were selected to represent the full span of the fallacies. The questions selected were over inclusive of the theory and its constructs. Netemeyer et al. (2011) have stated:

> Even with the focus on content and face validity, two other issues should be considered in constructing a pool of items. Clark and Watson (1995) advocated that the scale developer go beyond his or her own view of the construct in generating an initial item pool and that the initial pool contains items that ultimately will be only tangentially related to the content domain of the construct. Thus, it is better to be over inclusive of the construct's domain rather than under inclusive in generating an item pool. Care must also be taken to ensure that each content area of the construct has an adequate sampling of items. (p. 96)

Step 3: Assess the content validity of the items. MacKenzie et al. (2011) stated, "Once items have been generated for representing the focal construct[s], they should be evaluated for their content validity" (p. 304). The third step in the scale development process focused on content validity. The 150 questions selected were sent to three academicians who served as a panel of experts to rate these items. Requirements for selection as a panelist included: (a) they must possess some knowledge of wisdom and leadership issues, and (b) they must come from different fields of knowledge, e.g., business, education, psychology or theology. The three panelists were asked to rate the 150 questions that had been created, as to whether or not individual item questions adequately represented the construct they were assigned to.

The academic experts were limited to two answer choices; a question could be rated as either *good* or *bad*. From the pool of 150 questions developed and presented as representing the fallacies, the experts reduced the assessment to 56 questions through their selections of good and bad. Questions that received at least two good votes (two out of three raters) were retained. The56 questions selected by the panel were submitted to an Internal Review Board (IRB) for approval. Once approval was received from the IRB, the 56-question assessment was then given to 23 doctoral level students.

The 56-question assessment approved by the IRB comprised nine questions per fallacy of thinking with one exception. The ethical disengagement fallacy had 11 questions. No questions were added, removed, or revised after the panel of experts concluded their work.

Step 4: Formally specify the measurement model. MacKenzie et al. (2011) stated, "Once a content valid set of items has been generated, the next step is to formally specify a measurement model that captures the expected relationships between the indicators and the focal construct and/or sub-dimension they are intended to represent" (pp. 306-307). Brown (2006) stated, "In applied research, factor analysis is most commonly used in psychometric evaluations of multiple-item testing instruments" (p. 13). The common factor model was chosen as the factor analysis approach in this research study. The common factor model "postulates that each indicator in a set of observed measures is a linear function of one or more common factors and one unique factor" (Brown, 2006, p. 13). The common factor model has lent itself readily to both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA and CFA were both used in this research.

Step 5: Collect data to conduct pretest. MacKenzie et al. (2011) stated, "Once the measurement model has been formally specified, data need to be obtained from a sample of respondents in order to examine the psychometric properties of the scale, and to evaluate its convergent, discriminant, and nomological validity" (p. 310). Using an online panel of participants from Zoomerang (2012), the imbalance theory of foolishness assessment was tested with 150 CEO and senior-level leaders. All persons taking part in the sample were currently employed within their respective organizations; both for-profit and not-for-profit sectors of corporate America were engaged. The objective of the test was to assess the internal psychometric properties of the survey.

Step 6: Scale purification and refinement. Following data collection, the survey needed to be evaluated. MacKenzie et al. (2011) stated that the researcher needs "to determine whether (1) the solution is proper, (2) the individual relationships hypothesized are statistically significant, and (3) the relationships are consistent with the sample data" (p. 311). Brown (2006) said, "One of the most important aspects of model evaluation occurs prior to the actual statistical analysis—that is, providing a compelling rationale that the model is meaningful and useful on the basis of prior research evidence and theory" (p. 113). After substantive justification of the model was made, an EFA, CFA and model fit analysis were conducted.

This research study completed Steps 1-6 of the scale development process outlined by MacKenzie et al. (2011). The final four steps of the scale development process (Steps 7-10) were reserved for a time beyond this study. Completing the first six steps of the scale development process laid the foundation for the beginnings of a valid measure.

8. Data Analysis

A number of analytical procedures were utilized in the development of the imbalance theory of foolishness assessment. Analytical procedures utilized included: exploratory factor analysis; confirmatory factor analysis; model fit using SPSS Amos 21—included goodness-of-fit test using chi-square statistic; and internal consistency reliability using Cronbach's alpha.

Factor analysis has allowed test developers to address three fundamental issues related to a test's internal structure (Furr & Bacharach, 2008). First, factor analysis can be used to help clarify the number of items on a scale, but no hard-and-fast rules have been created to guide the decision on how many items to place on a measure (Hinkin, 1998). Factor analysis is useful in keeping a measure short, which "is an effective means of minimizing response biases caused by boredom or fatigue" (Hinkin, 1998, p. 109).

> The number of factors to be retained depends on both underlying theory and quantitative results. The researcher should have a strong theoretical justification for determining the number of factors to be retained, and examination of item loadings on latent factors provides a confirmation of expectations. (Hinkin, 1998, p. 112)

A second important use of factor analysis is "to reveal the associations among the factors/dimensions within a multidimensional test" (Furr & Bacharach, 2008, p. 175). Factor analysis has been an important tool for evaluating the internal structure (i.e., dimensionality) of psychological tests (Furr & Bacharach, 2008). "Test developers can use a variety of statistical procedures to evaluate a test's dimensionality. Although procedures such as cluster analysis and multidimensional scaling are available, factor analysis is the most common method of examination" (Furr & Bacharach, 2008, p. 69).

A third use of factor analysis is in "identifying which items are linked to which factors" (Furr & Bacharach, 2008, p. 177). Specific items are generated by test developers to reflect certain aspects of the construct. "Thus, to evaluate the quality of the measure, we must ensure that the items that are intended to reflect a particular factor actually are connected to that factor and to no other factors [factor loadings]" (Furr & Bacharach, 2008, p. 177).

9. Results

The research sample (N = 150) was comprised of CEO and senior-level leaders who volunteered to take the imbalance theory of foolishness assessment via Zoomerang (2012). The sample of respondents came from Zoomerang's (2012) 2.5 million-person database known as ZoomPanel. When placed on Zoomerang, a more appropriate name was given to the assessment fearing the title—"Imbalance Theory of Foolishness Inventory"—would not be appealing to respondents. As a result, the assessment was named the "Leadership Influence & Decision Making Inventory" (LIDMI). Reference to the assessment hereafter will be by that name.

Statistical procedures were performed using the Statistical Package for Social Scientists (SPSS), Version 20. SPSS Version 21 was utilized also in the study to perform a model fit analysis with SPSS Amos. The LIDMI contained 56 questions regarding the construct and 11 demographic questions. There was no missing data from the sample of respondents with respect to the 56 construct questions on the survey. All of these questions were in the mandatory-push-answer format. Two demographic questions were placed at the outset of the survey and both of these questions were answered by the entire sample of respondents as well. However, the nine demographic questions that followed the survey were not in the mandatory-push-answer format, which resulted in missing data amongst these questions. A question asking for the age of the respondents was inadvertently omitted.

Table 1 First Demographic Question: Are You Currently Employed?

Employed		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	150	100.0	100.0	100.0

Table 2 Second Demographic Question: Which Best Describes Your Current Level of Leadership?

Current level of leadership		Frequency	Percent	Valid percent	Cumulative percent
Valid	Chief Executive Officer	47	31.3	31.3	31.3
	Director	43	28.7	28.7	60.0
	Manager	21	14.0	14.0	74.0
	Supervisor	15	10.0	10.0	84.0
	Other (specify) _____	13	8.7	8.7	92.7
	Senior level executive	11	7.3	7.3	100.0
	Total	150	100.0	100.0	

Table 3 Third Demographic Question: What is Your Gender?

Gender		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	1	0.7	0.7	0.7
	Female	54	36.0	36.0	36.7
	Male	95	63.3	63.3	100.0
	Total	150	100.0	100.0	

Table 4 Fourth Demographic Question: Would You Describe Yourself as

Describe yourself as		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	1	0.7	0.7	0.7
	Asian	11	7.3	7.3	8.0
	Black/African American	15	10.0	10.0	18.0
	Hispanic/Latino	3	2.0	2.0	20.0
	Other (specify) _____	1	0.7	0.7	20.7
	Pacific Islander	1	0.7	0.7	21.3
	White/Caucasian	118	78.7	78.7	100.0
	Total	150	100.0	100.0	

Table 5 Fifth Demographic Question: Highest Level of Education

Highest level of education		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	2	1.3	1.3	1.3
	Associate degree	13	8.7	8.7	10.0
	Bachelor's degree	58	38.7	38.7	48.7
	High school graduate	5	3.3	3.3	52.0
	Master's degree	40	26.7	26.7	78.7
	Ph.D. or Ed.D.	7	4.7	4.7	83.3
	Professional degree (J.D., M.D., etc.)	7	4.7	4.7	88.0
	Some college	18	12.0	12.0	100.0
	Total	150	100.0	100.0	

Table 6 Sixth Demographic Question: Type of Organization You Work For

Type of organization		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	2	1.3	1.3	1.3
	Civic organizations	2	1.3	1.3	2.7
	Construction	5	3.3	3.3	6.0
	Education	16	10.7	10.7	16.7
	Financial services/activities	11	7.3	7.3	24.0
	Healthcare	9	6.0	6.0	30.0
	Information (TV, radio, publishing, software, etc.)	7	4.7	4.7	34.7
	Leisure & hospitality	4	2.7	2.7	37.3
	Manufacturing	16	10.7	10.7	48.0
	Natural resources	2	1.3	1.3	49.3
	Other (specify)	15	10.0	10.0	59.3
	Professional and business services	22	14.7	14.7	74.0
	Religious (church, synagogue, para-church, etc.)	2	1.3	1.3	75.3
	Retail trade	11	7.3	7.3	82.7
	Social services	7	4.7	4.7	87.3
	State or local government	5	3.3	3.3	90.7
	Transportation	5	3.3	3.3	94.0
	Utilities	2	1.3	1.3	95.3
	Wholesale trade	7	4.7	4.7	100.0
	Total	150	100.0	100.0	

Table 7 Seventh Demographic Question: Number of Employees in Your Organization

Number of employees		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	5	3.3	3.3	3.3
	Under 10	39	26.0	26.0	29.3
	10–19	8	5.3	5.3	34.6
	20–49	13	8.7	8.7	43.3
	50–99	13	8.7	8.7	52.0
	100–149	12	8.0	8.0	60.0
	150–499	10	6.7	6.7	66.7
	500–999	17	11.3	11.3	78.0
	1000–4999	10	6.7	6.7	84.7
	5000–9999	6	4.0	4.0	88.7
	10000–14999	4	2.7	2.7	91.4
	15000–25000	2	1.3	1.3	92.7
	25000 +	9	6.0	6.0	98.7
	N/A	2	1.3	1.3	100.0
	Total	150	100.0	100.0	

Table 8 Eighth Demographic Question: Number of Direct Reports

Number of direct reports		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	10	6.67	6.67	6.67
	Under 10	59	39.3	39.3	46.0
	10–19	20	13.3	13.3	59.3
	20–49	25	16.7	16.7	76.0
	50–99	13	8.7	8.7	84.7
	100 +	9	6.0	6.0	90.7
	N/A	14	9.3	9.3	100.0
	Total	150	100.0	100.0	

Table 9 Ninth Demographic Question: How Many Years of Leadership Experience Do You Have?

Number of years		Frequency	Percent	Valid percent	Cumulative percent
Valid	No response	12	8.0	8.0	8.0
	Under 5	10	6.7	6.7	14.7
	6–10	38	25.3	25.3	40.0
	11–20	41	27.3	27.3	67.3
	21–35	31	20.7	20.7	88.0
	35 +	16	10.7	10.7	98.7
	N/A	2	1.3	1.3	100.0
	Total	150	100.0	100.0	

Respondents were asked two final demographic questions, the results of which are not presented. The tenth demographic question asked respondents for their country of residence, and the final question asked for their state/providence of residence. There were no appreciable frequencies in this data as all of the respondents in the sample were from the USA. Furthermore, the sample of respondents ranged throughout the entire country with someone from every state.

Following data collection, Hinkin's (1998) recommendation was to perform an exploratory factor analysis (EFA) as the initial step in item reduction. An EFA can vary in the methodology chosen for factor extraction and rotation. "Because the principal-components method of analysis mixes common, specific, and random error variances, a common factoring method such as principal axis [factoring] is recommended" (Hinkin, 1998, p. 112). Although an EFA with principal components analysis (PCA) was initially investigated, principal axis factoring (PAF) was eventually chosen for the factor extraction method. Brown (2006) explained why a PCA should come first: "Because eigenvalues are drawn from the unreduced correlation matrix (R), PCA is always conducted initially regardless of the type of factor analysis requested (e.g., principal factoring)" (p. 39).

The researcher performed an EFA using PAF and promax (oblique) rotation on the data received from the sample of respondents. Results are presented below in Tables 10-13. The scree plot is given in Figure 1.

Table 10 KMO and Bartlett's Test (Exploratory Factor Analysis)

Kaiser-Meyer-Olkin measure of sampling adequacy.		0.893
Bartlett's test of sphericity	Approx. chi-square	6410.054
	df	1540
	Sig.	0.000

Table 11 Total Variance Explained for Exploratory Factor Analysis with Principal Axis Factoring, Promax Rotation, and Kaiser Normalization

Factor	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings[a]
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total
1	19.331	34.519	34.519	19.005	33.937	33.937	16.726
2	6.627	11.834	46.354	6.266	11.189	45.126	9.758
3	2.001	3.573	49.927	1.628	2.907	48.033	5.309
4	1.963	3.506	53.432	1.574	2.810	50.843	10.546
5	1.810	3.232	56.664	1.407	2.513	53.356	8.368
6	1.527	2.727	59.392	1.128	2.015	55.371	4.859
7	1.481	2.645	62.037	1.099	1.962	57.334	5.567
8	1.366	2.439	64.476	0.977	1.744	59.078	4.098
9	1.291	2.306	66.782	0.888	1.586	60.664	3.645
10	1.203	2.148	68.930	0.799	1.427	62.091	3.878
11	1.085	1.938	70.868	0.705	1.259	63.350	2.005
12	0.985	1.759	72.627				
13	0.898	1.604	74.230				
14	0.845	1.509	75.740				
15	0.781	1.394	77.134				
16	0.769	1.374	78.508				
17	0.733	1.309	79.817				
18	0.720	1.285	81.102				
19	0.623	1.112	82.213				
20	0.607	1.085	83.298				
21	0.595	1.063	84.361				
22	0.554	0.988	85.350				
23	0.534	0.953	86.302				
24	0.514	0.918	87.220				
25	0.470	0.840	88.061				
26	0.457	0.816	88.877				
27	0.429	0.767	89.644				

(**Table 11 continued**)

28	0.399	0.712	90.356
29	0.392	0.700	91.056
30	0.357	0.637	91.693
31	0.351	0.627	92.320
32	0.326	0.582	92.902
33	0.315	0.563	93.465
34	0.298	0.533	93.998
35	0.278	0.497	94.495
36	0.255	0.455	94.950
37	0.239	0.427	95.376
38	0.230	0.411	95.787
39	0.219	0.391	96.178
40	0.210	0.376	96.553
41	0.190	0.339	96.892
42	0.182	0.326	97.218
43	0.170	0.304	97.521
44	0.169	0.302	97.823
45	0.159	0.284	98.106
46	0.145	0.258	98.365
47	0.138	0.246	98.611
48	0.131	0.233	98.844
49	0.124	0.221	99.065
50	0.107	0.191	99.256
51	0.093	0.166	99.422
52	0.087	0.156	99.578
53	0.072	0.129	99.707
54	0.065	0.116	99.823
55	0.056	0.100	99.923
56	0.043	0.077	100.000

Note: Extraction Method: Principal Axis Factoring.

[a.] When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 12 Pattern Matrixa for Exploratory Factor Analysis with Principal Axis Factoring, Promax Rotation and Factors to Extract Fixed 2

	Factor	
	1	2
Q6. Ethical guidelines for this organization don't really apply to me.	0.945	
Q30. I believe ethics are general guidelines that can be temporarily disregarded in order to achieve some organizational goals.	0.932	
Q53. I feel that if I were to do something wrong, no one would ever know about it.	0.909	
Q36. It is more important for me to emphasize results rather than ethics.	0.908	
Q38. Listening to complaints is not my responsibility.	0.898	
Q48. I feel it is more important to appear ethical than it is to apply ethical principles.	0.882	
Q51. I usually don't learn anything when I listen to the thoughts and ideas of my direct reports.	0.860	
Q42. My personal morals are irrelevant to my work as a leader.	0.832	
Q29. I am too clever for other people to figure out what I am trying to do.	0.830	
Q54. As a leader, I should not have to compromise with others.	0.809	
Q24. I believe achieving important organizational outcomes is more important than following arbitrary ethical standards.	0.802	

(**Table 12 continued**)

Q55. I believe my organization would not punish me for doing something wrong.	0.799	
Q35. People are typically unable to catch me when I try to get around the rules.	0.791	
Q47. I feel confident others won't criticize me no matter what I do.	0.703	
Q39. The logic of other peoples' decisions does not appear as strong as mine.	0.642	
Q21. There is not much anyone can say that I don't already know something about the subject.	0.630	
Q18. I believe leaders shouldn't be held to the same standards of morality as others.	0.620	
Q52. Competitors are vicious and it's my responsibility to do what it takes to defeat them.	0.609	
Q13. It is useless to spend time worrying about problems because they will work themselves out.	0.574	
Q49. Whatever I touch turns to gold.	0.573	
Q37. I avoid worrying about negative outcomes.	0.567	
Q44. Mistakes I have made in the past occurred because I was too focused on the needs of others.	0.539	
Q26. I seldom spend much time worrying about what other people think or feel.	0.539	
Q41. I believe that risky behavior is okay, one just cannot be too risky.	0.525	
Q50. It is appropriate to focus on my personal well-being when making decisions.	0.524	
Q56. I can disentangle myself from any thorny situation.	0.523	
Q14. It seems perfectly okay to look out for my own interests.	0.479	
Q12. Occasionally a rule has to be bent in order to accomplish an important goal.	0.453	
Q2. I always consider my personal interests when making a decision.	0.440	
Q11. I am well insulated from troublemakers.	0.437	
Q7. There is little cause for me to worry because everything usually turns out right in the end.	0.421	
Q28. Very few people openly disagree with the decisions I make on behalf of this organization.		
Q43. I have made mistakes in the past because I was too optimistic thinking that everything would work out in the end.		
Q32. I am comfortable being the center of attention.		
Q34. It is sometimes necessary to divert fiscal resources toward things I think are more important for the organization to achieve.		
Q22. When I implement an idea, good things usually happen.		0.797
Q16. I have the ability to be effective in a number of different areas within this organization.		0.785
Q15. People typically look to me for answers.		0.754
Q46. I have a great amount of control in any organizational domain where I exert my opinions.		0.726
Q19. If I follow my own intuition, there are more successes than failures.		0.715
Q31. I have a keen sense about what needs to be done and how to do it.		0.702
Q25. Ideas I come up with are responsible for this organization's success.		0.668
Q27. I tend to be right about things most of the time.		0.664
Q40. It is important for me to do what I think is necessary to advance the interest of this organization.		0.569
Q3. Others around me generally find it better to rely on my knowledge than on the knowledge of others.		0.562
Q4. With a single word I can make things happen around the organization.		0.557
Q1. I believe it is possible for me to overcome nearly any problem.		0.500
Q20. I am firm in my decisions even when other people disagree with me.		0.497
Q17. People who are afraid of the consequences never get what they want out of life.		0.456
Q10. I have the power to do almost anything I want to do.		0.448
Q45. I like to listen to other peoples' stories of success and failure.		0.446
Q9. I tend to know more than other people around me.		0.445
Q23. I am successful in insulating myself from people that are obstructionists.		0.432
Q33. I lean on my own knowledge and understanding more than I do of others.		
Q8. I place the interests of this organization above my own personal interests.		
Q5. I do not worry about someone retaliating for something I have said or done.		

Note. Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.

[a] Rotation converged in three iterations.

Table 13 Factor Correlation Matrix for Exploratory Factor Analysis with Principal Axis Factoring, Promax Rotation, and Factors to Extract Fixed 2

Factor	1	2
1	1.000	0.361
2	0.361	1.000

Note: Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization.

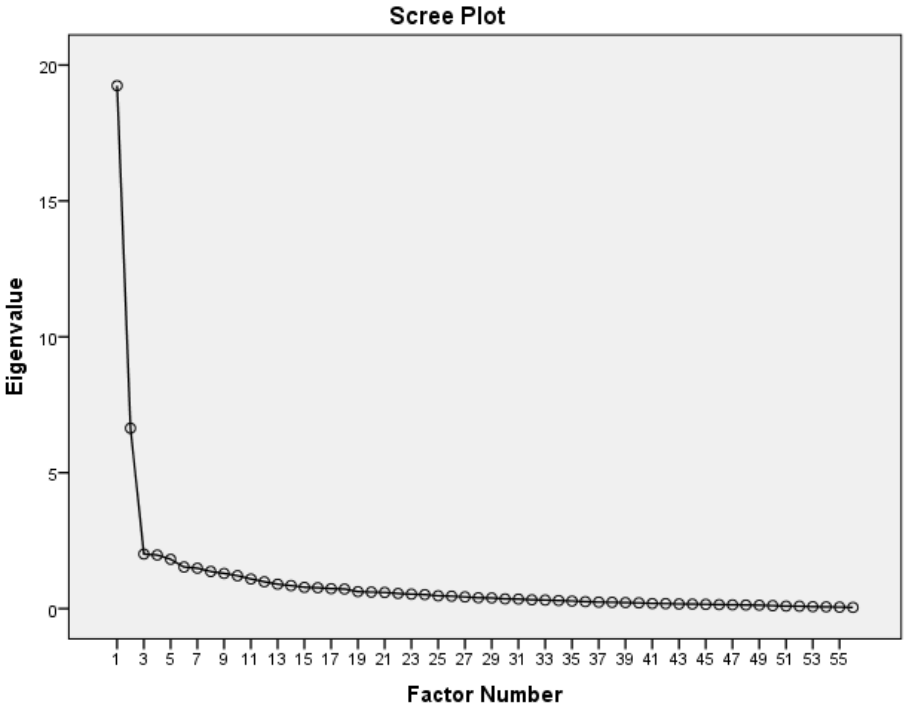

Figure 1 The Scree Plot for Exploratory Factor Analysis

Adequacy of the sample size was of first importance in the factor analytic study. No definitive answer exists as to how many participants afford a legitimate study. The number of variables in a study has seemed to dictate how many participants are required. However, the general rule of thumb has been to have at least 100 cases. Measures of sampling adequacy shown in Table 10suggest that the sample size (N = 150) was statistically significant (chi-square = 6410.054, $p < 0.001$, and KMO = 0.893) for the number of responses received. A KMO > 0.60 has been considered acceptable regarding the adequacy of sample size. Bartlett's Test of Sphericity ($p < 0.001$) signified the presence of dependent variables in the sample. If $p > 0.001$, Bartlett's Test of Sphericity would have lacked significance and indicated the presence of independent variables in the sample. Consequently, the research sample (N = 150) was statistically significant and contained dependent variables.

The EFA with PAF extracted 11 factors with eigenvalues greater than 1, which accounted for more than 63% of the variance in the sample. The first two factors alone accounted for more than 45% of the total variance. Factors 3 through 11 accounted for a little more than 18% of the total variance. The SPSS output is presented in Table 11. The scree plot (see Figure 4), which employs a graph where eigenvalues form the vertical axis and factors form the horizontal axis, clearly demonstrated that two factors had greater significance than the other nine. The scree plot seemed to reveal the presence of a two-factor solution.

From the EFA, the Total Variance Explained (Table 11) revealed that Factor 1 contained 34.52% and Factor 2

contained 11.83% of the research sample's variance. Together, Factors 1 and 2 combined for 46.35% of the sample's total variance. So even though 11 factors were indicated as being meaningful according to Kaiser normalization, two factors were highly significant in the solution.

After determining the presence of a two-factor solution, the EFA with PAF was continued with one change. Instead of choosing Kaiser normalization, factors to extract were fixed at 2. In addition, an oblique rotation was chosen using Promax. Because an oblique rotation was conducted, the test to observe was the pattern matrix. If an orthogonal (e.g., varimax) rotation had been performed, the rotated factor matrix would have been the test to observe. The key observation when performing either an oblique or orthogonal rotation is to find simple structure. Results from the EFA with PAF, promax rotation, and factors to extract fixed at 2 are located in Table 12 which reveals 31 items loading onto Factor 1 and 18 items loading onto Factor 2. There is no cross-loading between items. Coefficients below 0.40 were suppressed. The factor correlation matrix is displayed in Table 13.

Factors 1 and 2 (off the diagonal) both measured 0.361 in the factor correlation matrix. Since both factors were > 0.20, which is considered a minimum standard value, the presence of correlated factors in the research sample was indicated. This information helped to substantiate use of an oblique rotation. If Factors 1 or 2 (off the diagonal) had measured < 0.20, then an orthogonal rotation would have been the appropriate method. That is because the presence of uncorrelated factors in the research sample would have been signaled.

In agreement with the data analytical procedure followed by Traüffer (2008) in her dissertation, only items with factor loadings > 0.50 were retained in this study. Items with factor loadings < 0.50 were removed from further analysis in this study. Therefore, based upon the pattern matrix (Table 14), 38 questions remained on the LIDMI for further studies.

Table 14 Pattern Matrix Displaying Questions That Loaded High and Were Retained for Further Study, with Fallacies of Thinking Identified

Pattern Matrix[a]		
	Factor	
	1	2
Question 6	0.946	(ED)
Question 30	0.934	(ED)
Question 53	0.911	(NV)
Question 36	0.910	(ED)
Question 38	0.900	(EG)
Question 48	0.884	(ED)
Question 51	0.863	(OM)
Question 42	0.835	(ED)
Question 29	0.833	(NV)
Question 54	0.812	(ED)
Question 24	0.805	(ED)
Question 55	0.803	(NV)
Question 35	0.794	(NV)
Question 47	0.706	(NV)
Question 39	0.641	(OM)
Question 21	0.634	(OM)
Question 18	0.621	(ED)
Question 52	0.612	(OP)
Question 49	0.578	(UO)

(**Table 14 continued**)

Question 13	0.574	(UO)
Question 37	0.570	(UO)
Question 44	0.540	(EG)
Question 26	0.537	(EG)
Question 50	0.529	(EG)
Question 56	0.527	(NV)
Question 41	0.523	(NV)
Question 22		(OP) 0.794
Question 16		(OP) 0.784
Question 15		(OM) 0.754
Question 46		(OP) 0.727
Question 19		(UO) 0.713
Question 31		(UO) 0.693
Question 25		(UO) 0.667
Question 27		(OM) 0.665
Question 40		(OP) 0.570
Question 3		(OM) 0.560
Question 4		(OP) 0.556
Question 1		(UO) 0.500

Note: Extraction Method: Principal Axis Factoring; Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in three iterations.

The case processing summary (see Table 15) and the internal consistency reliability statistic (see Table 16) are given below. The case processing summary (N = 150) verifies that the sample contained 150 responses. In the present study, the reliability coefficient (Cronbach's alpha) was 0.964. The reliability statistic for the research sample was considerably higher than a minimal accepted value of 0.70.

Table 15 Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded[a]	0	0
	Total	150	100.0

Note:[a] Listwise deletion based on all variables in the procedure.

Table 16 Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
0.964	0.962	56

Scale statistics (see Table 17) and item total statistics (see Table 18) are given below. As a heuristic concerning items for retention/deletion, corrected item-to-total correlations of 0.50 or higher and alpha levels of 0.80 or higher should be retained(Netemeyer et al., 2003). Corrected item-to-total correlations are located in column three of Table 18.

Table 17 Scale Statistics

Mean	Variance	Std. deviation	N of items
251.14	2561.812	50.614	56

Table 18 Item Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Question 1: I believe it is possible for me to overcome nearly any problem.	245.31	2537.196	0.234	0.620	0.964
Question 2: I always consider my personal interests when making a decision.	246.33	2479.752	0.515	0.664	0.963
Question 3: Others around me generally find it better to rely on my knowledge than on the knowledge of others.	245.63	2525.643	0.377	0.627	0.964
Question 4: With a single word I can make things happen around the organization.	245.85	2491.768	0.481	0.672	0.963
Question 5: I do not worry about someone retaliating for something I have said or done.	245.93	2520.068	0.256	0.563	0.964
Question 6: Ethical guidelines for this organization don't really apply to me.	248.51	2416.721	0.733	0.875	0.962
Question 7: There is little cause for me to worry because everything usually turns out right in the end.	246.51	2470.372	0.565	0.683	0.963
Question 8: I place the interests of this organization above my own personal interests.	246.01	2541.591	0.136	0.613	0.964
Question 9: I tend to know more than other people around me.	246.01	2497.980	0.446	0.718	0.963
Question 10: I have the power to do almost anything I want to do.	246.21	2474.823	0.549	0.608	0.963
Question 11: I am well insulated from troublemakers.	246.59	2467.008	0.581	0.708	0.963
Question 12: Occasionally a rule has to be bent in order to accomplish an important goal.	246.53	2478.828	0.503	0.655	0.963
Question 13: It is useless to spend time worrying about problems because they will work themselves out.	247.05	2446.031	0.631	0.727	0.963
Question 14: It seems perfectly okay to look out for my own interests.	246.51	2465.030	0.614	0.706	0.963
Question 15: People typically look to me for answers.	245.49	2534.037	0.291	0.741	0.964
Question 16: I have the ability to be effective in a number of different areas within this organization.	245.24	2546.667	0.147	0.721	0.964
Question 17: People who are afraid of the consequences never get what they want out of life.	246.17	2495.522	0.462	0.616	0.963
Question 18: I believe leaders shouldn't be held to the same standards of morality as others.	247.85	2430.265	0.561	0.642	0.963
Question 19: If I follow my own intuition, there are more successes than failures.	245.61	2524.025	0.398	0.685	0.964
Question 20: I am firm in my decisions even when other people disagree with me.	245.89	2507.282	0.460	0.604	0.963
Question 21: There is not much anyone can say that I don't already know something about the subject.	247.21	2438.773	0.719	0.728	0.963
Question 22: When I implement an idea, good things usually happen.	245.65	2529.557	0.393	0.756	0.964
Question 23: I am successful in insulating myself from people that are obstructionists.	246.35	2481.812	0.614	0.701	0.963
Question 24: I believe achieving important organizational outcomes is more important than following arbitrary ethical standards.	247.51	2429.996	0.700	0.841	0.963
Question 25: Ideas I come up with are responsible for this organization's success.	245.66	2519.622	0.354	0.668	0.964
Question 26: I seldom spend much time worrying about what other people think or feel.	246.82	2461.370	0.567	0.650	0.963
Question 27: I tend to be right about things most of the time.	245.89	2501.895	0.544	0.779	0.963
Question 28: Very few people openly disagree with the decisions I make on behalf of this organization.	246.25	2489.130	0.513	0.635	0.963
Question 29: I am too clever for other people to figure out what I am trying to do.	247.58	2420.983	0.803	0.919	0.962

(**Table 18 continued**)

Question 30: I believe ethics are general guidelines that can be temporarily disregarded in order to achieve some organizational goals.	248.11	2423.291	0.728	0.887	0.962
Question 31: I have a keen sense about what needs to be done and how to do it.	245.33	2528.345	0.354	0.658	0.964
Question 32: I am comfortable being the center of attention.	246.25	2481.784	0.512	0.645	0.963
Question 33: I lean on my own knowledge and understanding more than I do of others.	245.93	2497.767	0.510	0.742	0.963
Question 34: It is sometimes necessary to divert fiscal resources toward things I think are more important for the organization to achieve.	246.10	2494.641	0.502	0.619	0.963
Question 35: People are typically unable to catch me when I try to get around the rules.	247.60	2418.899	0.749	0.839	0.962
Question 36: It is more important for me to emphasize results rather than ethics.	247.84	2417.558	0.759	0.877	0.962
Question 37: I avoid worrying about negative outcomes.	246.83	2446.502	0.661	0.723	0.963
Question 38: Listening to complaints is not my responsibility.	247.87	2429.816	0.694	0.841	0.963
Question 39: The logic of other peoples' decisions does not appear as strong as mine.	247.01	2448.215	0.671	0.736	0.963
Question 40: It is important for me to do what I think is necessary to advance the interest of this organization.	245.86	2507.638	0.429	0.713	0.964
Question 41: I believe that risky behavior is okay, one just cannot be too risky.	246.77	2463.777	0.595	0.679	0.963
Question 42: My personal morals are irrelevant to my work as a leader.	247.92	2419.752	0.680	0.813	0.963
Question 43: I have made mistakes in the past because I was too optimistic thinking that everything would work out in the end.	246.71	2499.011	.411	0.646	0.964
Question 44: Mistakes I have made in the past occurred because I was too focused on the needs of others.	246.98	2471.255	0.554	0.709	0.963
Question 45: I like to listen to other peoples' stories of success and failure.	245.81	2531.616	0.222	0.678	0.964
Question 46: I have a great amount of control in any organizational domain where I exert my opinions.	245.80	2497.826	0.457	0.738	0.963
Question 47: I feel confident others won't criticize me no matter what I do.	247.09	2436.904	0.722	0.819	0.963
Question 48: I feel it is more important to appear ethical than it is to apply ethical principles.	247.87	2413.163	0.732	0.858	0.962
Question 49: Whatever I touch turns to gold.	247.21	2446.165	0.653	0.764	0.963
Question 50: It is appropriate to focus on my personal well-being when making decisions.	246.62	2472.949	0.586	0.692	0.963
Question 51: I usually don't learn anything when I listen to the thoughts and ideas of my direct reports.	247.87	2426.541	0.759	0.874	0.962
Question 52: Competitors are vicious and it's my responsibility to do what it takes to defeat them.	247.14	2439.490	0.670	0.764	0.963
Question 53: I feel that if I were to do something wrong, no one would ever know about it.	247.97	2423.012	0.738	0.899	0.962
Question 54: As a leader, I should not have to compromise with others.	247.73	2425.140	0.695	0.823	0.963
Question 55: I believe my organization would not punish me for doing something wrong.	247.63	2429.254	0.664	0.788	0.963
Question 56: I can disentangle myself from any thorny situation.	246.70	2460.748	0.656	0.720	0.963

Results from the sample of respondents revealed a neat two-factor solution per the scree plot (see Figure 1). From the sample, 38 questions with high factor loadings (> 0.50) were retained (see Table 14). Two fallacies emerged from the high factor loadings, based upon the 38 questions that were retained. The first factor received

the most support from questions representing ethical disengagement, while the second factor received the most support from questions representing omnipotence. However, upon examining the 38 questions according to the fallacies represented, each fallacy was placed in rank order by frequency demonstrating the following result: ethical disengagement (8), invulnerability (7), unrealistic optimism (7), omniscience (6), omnipotence (6), and egocentrism (4). This examination revealed that, in fact, a six-factor solution had begun to take shape with the LIDMI.

At the conclusion of the factor analytic study, it was determined that the model did not fit the data. Testing of the null hypothesis had failed and the alternative hypothesis was supported. The study was not a failure; rather, it only meant the data did not support the expected outcome. Data from the Zoomerang (2012) sample did not appear to respond well to the model. Only two of the six fallacies were supported with the results: ethical disengagement (factor one) and omnipotence (factor two). A discussion of the findings will come next and explore some reasons for the data behaving poorly.

10. Discussion

The intended purpose of this research study was to operationalize the imbalance theory of foolishness (Sternberg, 2002). After a thorough examination of the literature we identified no previous empirical examination of the theory prior to the present study. The six dispositions associated with the theory—unrealistic optimism, egocentrism, omniscience, omnipotence, invulnerability, and ethical disengagement—are undesirable leadership decision-making fallacies. Operationalizing these fallacies in a survey was a major challenge. In this study it was assumed that powerful leaders would exhibit greater susceptibility toward the six dispositions associated with the theory. Following the work of Netemeyer et al. (2003), a single null hypothesis and alternative were proposed for the present study:

H_0: The model fits the data.

H_a: The model does not fit the data.

In scale development, Netemeyer et al. (2003) stated that the focus is always on whether the hypothesized factor model does or does not fit the data when the researcher's interest is in the development and validation of multi-item self-administered measures of unobservable, latent constructs. The researcher's objective in this study was to provide a way to determine whether data would support a hypothesized factor model for the imbalance theory of foolishness.

The scale development process in this research closely followed the work of MacKenzie et al. (2011) and was guided by some points advocated by Hinkin (1998). The researcher sought to create a measure that would satisfy American Psychological Association standards for psychometric adequacy. The assessment for the imbalance theory of foolishness is known as the Leadership Influence and Decision Making Inventory (LIDMI). Recommendations for future research will propose that the scale development process be repeated and the survey refined.

The imbalance theory of foolishness (Sternberg, 2002) had not been studied empirically prior to the present research with one minor exception. As a secondary focus in her dissertation, Jordan (2005) created the fallacies of thinking scale (FTS) which was the initial attempt to operationalize the balance theory of wisdom with its five fallacies. Subsequent to Jordan's research, the imbalance theory of foolishness was created with a sixth fallacy-ethical disengagement-built from the balance theory of wisdom. Nevertheless, the LIDMI was an initial attempt to operationalize the imbalance theory of foolishness.

Results from the sample of respondents revealed a neat two-factor solution per the scree plot (see Figure 1). From the sampling, questions with high factor loadings (> 0.50) per factor were retained (see Table 18). Two fallacies emerged from the high factor loadings, given the 38 questions that were retained. The first fallacy (representing factor one) was ethical disengagement and the second fallacy (representing factor two) was omnipotence. Unsatisfied with the model fit, all 38 questions from the pattern matrix were examined according to the fallacy of thinking they represented. The fallacies were rank ordered according to the frequency of their appearance amongst the questions retained: ethical disengagement (8), invulnerability (7), unrealistic optimism (7), omniscience (6), omnipotence (6), and egocentrism (4). This examination revealed that, in fact, a six-factor solution was present with the LIDMI.

There was some concern regarding item discrimination because Sternberg's definitions are complex. Questions addressing six different items (fallacies) may have posed a problem for the sample of respondents. Consolidation of items is a possibility and will be discussed under suggestions for future research. As the LIDMI is refined, better ways of constructing questions may be explored to address concerns pertaining to covert means of asking sensitive questions on the survey.

11. Suggestions for Future Research

There are some items that should be considered for future research. First, foolish thinking and foolish behavior were not distinguished in this research. The six fallacies of thinking associated with the imbalance theory of foolishness (Sternberg, 2002) include both foolish thinking and foolish behavior. Future researchers may want to try to isolate foolish thinking from foolish behavior by examining specific dispositions. Foolish thinking does not necessarily lead to foolish behavior, but the imbalance theory of foolishness suggests all foolish behavior comes from foolish thinking.

A second suggestion is to consider the consolidation of the number of fallacies associated with the imbalance theory of foolishness. Because Sternberg did not empirically test the theory, he had no proof that six dispositions were necessary to complete the theoretical construct of his unknown model. Discriminating between six dispositions might have been a problem for the sample of respondents. Perhaps one or more of the fallacies of thinking could be consolidated and the study repeated. The exploratory factor analysis demonstrated that there were 38 questions with high factor loadings (> 0.5) on two factors. The questions were analyzed and arranged according to the fallacy of thinking they represented: ethical disengagement (8), invulnerability (7), unrealistic optimism (7), omniscience (6), omnipotence (6), and egocentrism (4). If a future researcher wanted to repeat this study with the LIDMI, perhaps they could eliminate or consolidate the fallacy of egocentrism and omnipotence.

A third suggestion is to design and conduct studies that will develop and refine the LIDMI. The scale development process requires retesting and refinement. Netemeyer et al. (2003) stated that "restarts are required as researchers learn from their efforts and mistakes and as revisions are needed" (p. 185). One area of special concern in this research involved cognitive complexity, an issue which was expressed several times in the dissertation. Future studies must be on guard concerning this issue. Sternberg's definitions are very technical and can create difficulties for those unfamiliar with his theory and fallacy definitions. Testing different groups of individuals for cognitive complexity should be considered.

A fourth suggestion is to seek ways for respondents to become more transparent with their answers on the LIDMI. Hubris is thought to be an issue with those in high leadership positions, and it was thought to have been

an issue in this study. Hubris resists transparency. Therefore, future studies need to be designed in such a way as to help executives provide more honest answers. This might be done by recruiting executive coaches to administer this tool to executives with a personal encouragement to be transparent because it will be followed by a discussion of the outcomes and a plan for dealing with negative dispositions the leaders might have.

A fifth suggestion is to consider whether the LIDMI is an instrument that would be useful in measuring moral and ethical behavior in leaders. Numerous researchers (Ciulla, 2001; Trevino, Hartman, & Brown, 2000) have suggested that organizational leaders have a responsibility to maintain proper ethical standards and model moral behavior for the sake of employees and the image of the organization. Balch and Armstrong (2010) have suggested:

Future research needs to be conducted that would enable an audit of the ethical health of an organization. . . . Such a baseline would be useful to evaluate the ethical health of management giving a leader the ability to enact change." (p. 302)

The LIDMI survey, which will eventually emerge from this research study, could conceivably help organizations conduct an audit on management by examining the thinking behavior of executive leaders. Organizational leaders need more ways to reflect upon both their image and practices.

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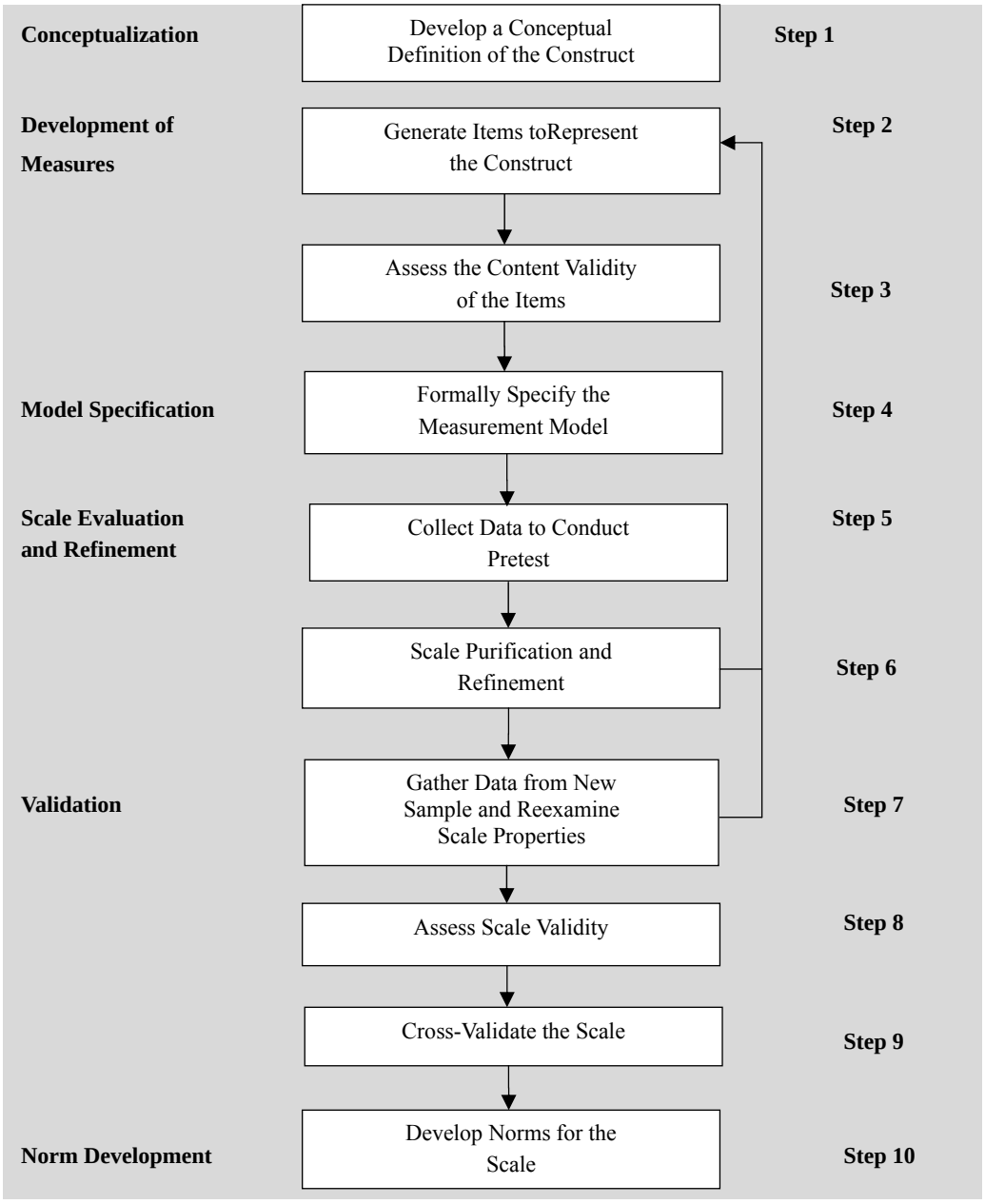
Appendix Overview of the Scale Development Process



Adapted from "Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques", by S. B. MacKenzie, P. M. Podsakoff, and N. P. Podsakoff, 2011, *MIS Quarterly*, Vol. 35, No. 2, p. 297.