WHO HAS TIME TO DEVELOP?

CREATING A PRACTICAL LEADER DEVELOPMENTAL READINESS ASSESSMENT INSTRUMENT

by

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This thesis is dedicated to my son, Arcadius Cristan. Throughout my academic journey there has been many obstacles trying to place limits on my capability. This is a testament to always push to be the best version of yourself, no matter how the world may perceive you.

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ABSTRACT

The current study was conducted to determine if a valid short-scale leader developmental readiness instrument could be created from the one proposed and used in the previous research. Leader developmental readiness is determined by an individual's motivation and ability to develop. By determining employees who are ready to develop as leaders, employers can properly use company resources to train and develop these future leaders. This study was a two part study. In the first study, six measures believed to be components of leader developmental readiness were shortened by using confirmatory factor analysis. The second study aimed to validate the shortened measure by conducting a secondary confirmatory factor analysis on a different sample. From the research we were able to create a valid and shorter leader developmental readiness instrument. The leader developmental readiness instrument was reduced down to 19-items. The results of this study contribute to the leader developmental readiness research by creating a practical instrument that can be used in research and in the workforce.

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CHAPTER I: LITERATURE REVIEW

Introduction

Vince Lombardi once said, “Leaders are made, they are not born. They are made by hard effort, which is the price which all of us must pay to achieve any goal that is worthwhile” (Newell, 2016). Lombardi an American football player, coach, and executive in the National Football League understood that there is a price to pay in order to create leaders, especially if you want to create great ones. This understanding is reflective not only in sports but also in the work industry. For example, according to an article on Forbes’ website it is estimated the United States spends an estimated $166 billion on leader development (Westfall, 2019). Furthermore, Training Industry claims that leader development continues to experience growth that is independent of economic trends (Training Industry, 2019). Unfortunately, as there continues to be an increased investment in leadership development the effectiveness of this training does not seem to lead to consistently positive results. A study found that only 7% of senior managers believe their organizations are effectively developing their leaders (Gurdijian, Halbeisen, & Lane, 2014). While, a study on about 2,500 HR Professionals indicated that 50% believe their organizations do not have a successful leadership development program or process and only 35% believe their organization has the necessary bench strength to fill critical leadership positions (Development Dimensions International, 2018). This inconsistency has not gone unnoticed and from this, our study emerged. We attempt to improve a set of measures that will improve a company’s ability to identify employees who show leader developmental readiness (LDR), so that their investment does not end without a pay of dividends.

Leader Developmental Readiness

LDR is a term used to indicate employees who are considered to be best suited to receive leadership training/development, and according to the LDR framework we can identify those employees (Avolio & Hannah, 2008). The concept of identifying individuals who are developmentally ready did not stem from the lack of positive outcome of leadership training. Its origins come from the field of clinical psychology. Clinical Psychologist identified those individuals who were considered to be in a state called developmentally ready had responded better to treatment and led to positive outcomes as compared to those individuals who were not in a developmentally ready state (Avolio & Hannah, 2008). It is from this notion that researchers who study LDR have adopted a similar belief to the one in clinical psychology, which is employees will benefit most from leader development training when they are developmentally ready (McKenna & Davis, 2009; Avolio & Hannah, 2008). Research done by Laske (1999) supports this belief in which the researcher identified that the effectiveness of coaching (a common type of development for leaders) is determined by the time in the employee's work life (state that the employee is in) that the coaching occurs. Although Laske does not directly call this LDR, the research suggests that there are specific characteristics that can be identified to ensure that we are selecting the correct candidates for leader development. If employers can correctly identify which employees would benefit most out of leader development training, then how do we determine those employees and in what state must they be in?

An article by Hannah and Avolio (2010) outlines the way individuals who are better suited for leadership training/development are different to those who are not. The

difference was identified after years of research and describes two parameters that are fundamental to LDR, motivation and ability. These concepts drive the study and the set of measures that we propose will identify LDR. Thus, we describe the fundamental factors and the set of measures associated with each below.

Motivation to Develop

Motivation to develop is driven by interest and goals, learning goal orientation, and developmental efficacy (Hannah & Avolio, 2010). These concepts are measured with different scales that are a components of one's motivation to develop. They include learning goal orientation, motivation to learn and motivation to lead. (Center for Leadership & Strategic Thinking, 2014; Chartoff, 2019).

Goal Orientation

There is a significant importance to the value of goal orientation (GO) within organizational research and within the past two decades it has received a lot of notice (Payne, Youngcourt, & Beaubien, 2007). Goal orientation depicts the motivation an individual has in a performance situation (Donovan, Lorenzet, Dwight, & Schneider, 2018) and is characterized by two dimensions: learning goal orientation (LGO) and performance goal orientation (PGO) (Button et al., 1996). An individual with strong LGO is characterized by having a motivation to master task and obtain knowledge and skills for the sake of learning and developing. In contrast, a strong PGO is characterized by having a motivation to demonstrate one's abilities and is guided by avoiding/appearing less competent.

From the descriptions of the two GO dimensions, you would want an employee with a strong LGO as compared to those with a PGO (Culbertson & Jackson, 2016)

because they desire to learn and develop due to an internal motivation. Research also suggests that employees with a stronger LGO are more likely to engage in career development and have aspirations to manage (Godshalk & Sosik, 2003; Drgoni, Tesluk, & Russell, 2009) as compared to those with more of a PGO. The learning literature further supports this idea by suggesting that those who are internally motivated to learn (or having a LGO) will have better outcomes from learning than those who have external motivations to learn or PGO (Hidi & Anderson, 1992; Hidi & Harackiewicz, 2000). It is because of these findings that the ability to assess an employee's Goal Orientation must be included in determining who would have a higher return on investment for leadership development.

Motivation to Lead and Motivation to Learn

It would make sense for those who are considered developmentally ready to be motivated to lead and to learn. For example, research has demonstrated that those who demonstrate a motivation to learn will have better training outcomes (Liao & Tai, 2006). When it comes to motivation to learn it is affected by individual differences, career and job attitudes (Bell & Ford, 2007). It is important to not confuse motivation to learn with LGO. LGO has to do with your reasoning to complete a task in order to further develop. Motivation to learn is about how much you are motivated to develop due to learning.

Motivation to lead takes into consideration how much of an individual's decision to develop is from wanting to become a leader (Chan & Drasgow, 2001). In the context of the current research you can imagine how important such a construct is. If you are wanting to develop leaders it would only make sense to identify those leaders who are motivated to lead for the sake of leading rather than motivated by other reasons such as

compensation and status. Although motivation to lead and motivation to learn are not constructs adopted by Avolio and Hannah (2008) they have been used in more recent research as potential measures to identify those who are developmentally ready (Chartoff, 2019). Thus, further examination of these two constructs will help to confirm if they are worth using in the LDR framework.

Ability to Develop

Ability to develop is stimulated by an employee's self-awareness, self-complexity, and metacognitive ability (Hannah & Avolio, 2010). In other words more complex individuals have more cognitive and affective associations with which to process developmental experiences which will improve their ability to develop. With a couple of measures we may identify these complex employees (Center for Leadership & Strategic Thinking, 2014; Chartoff, 2019).

Metacognitive Ability

Have you ever been in a training or learning situation where the instructor has asked you to consider how to think about what you are learning or to be cognizant of your thoughts? This is what can be referred to as metacognitive thinking. This ability to think about our thinking can identify someone as being developmentally ready and can lead to better outcomes when taking on a development opportunity (Hannah, 2006).

Engaging in metacognitive activities has demonstrated that it can improve self-efficacy and LGO (Hannah, 2006). Meta-cognitive abilities also relate to critical thinking, creative problem solving, and decision making (Black, Soto & Spurlin, 2016; Chartoff, 2019). Meta-cognitive abilities has been shown to improve and accelerate development because it has the ability to increase the depth of processing and can lead to self-insight

(Hannah & Avolio, 2010). For example, a leader may reflect on how their emotions make them perceive a certain situation or feedback and can alter their perceptions by understanding that because of their emotional state they may be focused solely on a small aspect of the whole situation. In order to identify LDR in employees it is important to identify those who practice meta-cognitive techniques. Furthermore, in order to accelerate developmental readiness of leaders they should be taught metacognitive techniques that teach them to reflect on their training (Avolio & Hannah, 2008; Hannah & Avolio, 2010).

Intellectual Openness

Chartoff (2019) used a measure of intellectual openness to further measure an employee's ability to develop. Intellectual openness is adapted from the factor of Openness in the five factor model. Individuals high in this factor (openness) can be described as "change oriented, seeks variety, prefers novelty rather than routine, independent, and enjoys doing new things" (Chartoff, 2019, p. 13). Research has suggested in the past that openness is a predictor of training performance (Lievens, Harris, Keer, & Bisqueret, 2003). Intellectual openness can be described as, "someone who is open to new ideas, needs intellectual stimulation, carries the conversation to a higher level, and looks for deeper meaning in things" (Chartoff, 2019, p. 13). Those with high intellectual openness demonstrate the ability to being open to accept what they have learned in training (Chartoff, 2019 p. 13; Golberg et al., 2006). Selecting employees who have intellectual openness would respond better to leadership development because they may be more willing to adopt the training and development they receive and therefore become better leaders than those who find it difficult to accept what they have learned.

It is with the understanding of how motivation and ability influence LDR that we adopt the definition of LDR from Hannah and Avolio (as cited in Chartoff, 2019) that is "As the ability and motivation to attend to, make meaning of, and appropriate new leader KSAAs (knowledge, skills, abilities, and attributes) into knowledge structures along with related changes in identity to employ those KSAAs" (p.1182).

Assessing and Developing a LDR Measure

The concept and measure of LDR over the past decade has continued to be researched and refined due to its relative infancy. The complexity of the scales originates from the number of various constructs that are related to and measure the totality of LDR (e.g., Meta-Cognitive Ability). In return researchers have continued using the long and time-consuming instrument originally suggested by Avolio and Hannah (2008), as they try to identify those who are ready for leader development. These same researchers suggested that because of the complexity and the combined length of the measures needed to identify LDR, at some point a much leaner instrument would need to be tested and developed than the ones suggested in the past (Avolio & Hannah, 2008; Hannah & Avolio, 2010). The creation of a leaner instrument would be much more practical for applied research and in the business sector where time and money are a valuable resource (Hannah & Avolio, 2010).

As Hannah and Avolio predicted research in LDR has begun to enter the business sector. Recently, Chartoff (2019) used the measures suggested by these researchers on a study conducted for a statewide leadership development program with a survey instrument that was over 100 questions in length. Although the instrument was lengthy the research did demonstrate that some of the measures suggested by (Avolio & Hannah,

2008; Hannah & Avolio, 2010) are predictors of LDR. These measures included learning goal orientation, metacognitive ability, intellectual openness, motivation to lead, motivation to learn, and perspective taking (Chartoff, 2019). This recent study suggest that we are at a moment in the LDR research where the practicality of using a less intense instrument can be useful as other researchers follow Chartoff (2019) and begin using the instrument in the work sector.

Thus, the goal of this research is to further support future research on LDR by adding a much more practical LDR instrument that is shorter, valid and easy to use. We hope to create a comprehensive measure that takes into consideration the value of time, as researchers begin to study LDR in the work environment. In addition, we will also test our measures with a sample from the Amazon Mechanical Turk instead of using college students to demonstrate external validity.

RQ1: Can we create a valid shortened measures of LDR?

CHAPTER II: METHODS

In order to shed light on our research question, we conducted a two studies that employed a variety of methods and sample populations. We began with a Confirmatory Factor Analysis (CFA) to develop a shorter DR assessment. Then we tested this shorter DR assessment using individuals in the workforce.

Study 1

Study 1 examined if an Leadership Developmental Readiness questionnaire could be shortened by using (CFA). We compared the original factor model (six-factor model structure) to a shortened scale factor model (six-factor model structure). Data collected by Chartoff (2019) was used to conduct this CFA. Two scales (Perceived Organizational Support and Measure of Trainee Improvement) in the LDR assessment were excluded from this study because they were specific to the research questions of Chartoff's article. A brief description of the method used by Chartoff (2019) to collect the data is below. For full detail see Chartoff (2019).

Participants and Design

Participants from a Tennessee state leadership development program were invited to participate in the study. The participants worked for various state agencies, ranging from the Department of Human Resources to the Tennessee Bureau of Investigation. Each of these participants were in a position of leadership within their perspective organizations, and they have been identified by their superiors as having high potential. To be selected for the program, supervisors recommended these participants through an application process that was reviewed by the program committee.

Supervisors were given tips on how to select leaders within their organization by looking for those that are high potential, well respected, have a willingness to learn and grow. Agencies were encouraged to consider all employees holding critical leadership positions as potential candidates for development program but many of these leaders were typically from the senior and executive level. Each agency was allotted a specific number of seats depending on the population of employees within their perspective organization. The total number of trainees participating in the leadership development program was 120. Due to partial or incomplete responses, the total number of participants in the study was 89.

Procedure

The state leadership development program is a year-long program. Each training day is considered a workshop, and there is a total of six workshops in the 12-month period along with two individual coaching sessions. Data collection for the study took place between Workshop five and Workshop six. The researchers attended Workshop five to formally introduce the study and solicit participation using a flyer

An on-line survey was created using a web-based survey tool (Qualtrics). Participants accessed the web-based survey through a link that was provided in an email sent out at the beginning of the three-week period from the Directors of leadership development program.

Participants were asked to complete self-report questions measuring various characteristics and traits that are related to leader developmental readiness. Including demographic questions, the full measurement tool consisted of 100 items and it took around 30-45 minutes to complete.

Participants were offered the opportunity to receive personalized and confidential feedback with information regarding their scores of LDR by providing an email address in the Qualtrics survey. Within four weeks of the survey closing, participants were sent these two documents via email with their personalized feedback if they had requested it. After this was completed, all emails or identifying information were removed from the dataset.

Measures

The following measures were combined to create the instrument for data collection. Most of the scales were taken from a research initiative sent from the University of Washington, and this report described their research method for measuring LDR (Center for Leadership & Strategic Thinking, 2014). The current study used three of the four measures of motivation to develop: a goal orientation scale (Button et al., 1996), a motivation to-lead scale (Chan & Drasgow, 2001), and a motivation-to-learn measure (Ryan & Connell, 1989). Chartoff also used two measures of ability to develop: a metacognitive ability scale (Schraw & Dennison, 1994) and a perspective taking scale (Davis, 1983). A measure of intellectual openness (Goldberg et al., 2006) as a component of ability to develop was also used. The survey instrument also included perceived organizational support (Eisenberger & Huntington, 1986) as a moderator which we exclude from our current study. Each of the criterion is briefly described below.

Motivation to develop. The following three scales were used the measure participant's motivation to develop.

Goal orientation. One aspect of participants' motivation to develop was assessed using a Goal Orientation scale (Button et al., 1996). This instrument consists of two factors: performance goal orientation (PGO) and learning goal orientation (LGO). It is desired that participants score higher on the LGO subscale compared to the PGO subscale, indicating participants are striving to increase their competence rather than striving to increase favorable judgment (Button et al., 1996). Because of this, participants received both a PGO and LGO score. An example item measuring performance goal orientation is "I prefer to do things that I can do well rather than things that I do poorly." An example item measuring learning goal orientation is "the opportunity to do challenging work is important to me." Each of these subscales consists of eight items resulting in a total of 16 items. This self-report instrument is rated on a 5-point Likert scale ranging from 1 (Strong Disagree) to 5 (Strongly Agree). This instrument demonstrated good reliability, with a Cronbach's α of .76 for the PGO subscale and .79 for the LGO subscale (Button et al., 1996).

Motivation to learn. The motivation to learn scale is a 14-item instrument measuring the extent to which participants believe they are ready to acquire new and more advanced leadership behaviors during developmental challenges (Center for Leadership & Strategic Thinking,
2014). The scale will be measuring the construct of "interest and goals" (Avolio and Hannah, 2008). The authors (Center for Leadership & Strategic Thinking, 2014) adapted the current scale from the Learning Self-Regulation Questionnaire (Ryan & Connell,

1989). The scale consists of two elements: external and internal drive. An example item measuring external drive is “I participate in leadership development because others would think badly of me if I didn’t.” An example item measuring internal drive is “the reason I will continue to broaden my leadership skills is because it’s important to me to do well at this.” Both of these elements can co-exist, but intrinsic drive can have a positive effect on performance, persistence and well-being. The self-report instrument is rated on a 5-point Likert scale ranging from 1 (Not At All True) to 5 (Extremely True). As for reliabilities, the external motivation to learn subscale demonstrated a Cronbach’s α of .61, while the internal motivation to learn subscale demonstrated a Cronbach’s α of .71.

Motivation to lead. The 15-item motivation to lead instrument has been adapted from the original scale which consisted of 27-items (Chan & Drasgow, 2001). It was used to measure participant’s propensity to engage in leadership development activities both inside and outside of work. This scale will be measuring the component of developmental efficacy (Avolio & Hannah, 2008). An example item measuring this construct is “I have a tendency to take charge in most groups or teams that I work in.” The self-report measure is rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The measure demonstrated good internal consistency reliability, with a Cronbach’s α of .87.

Ability to develop. The following three instruments measure participants’ ability to develop.

Awareness of the way I think and learn. This 19-item measure has been adapted by the Center for Leadership & Strategic Thinking (2014) from the original 52-item

measure (Schraw & Dennison, 1994) in order to assess participant's metacognitive ability and self-awareness (Avolio & Hannah, 2008). The instrument consists of two factors: regulation of cognition and knowledge of learning. An example item measuring regulation of cognition is "I have control over how well I learn." An example item measuring knowledge of learning is "I am a good judge of how well I understand something." The self-report measure is rated on a 5-point Likert scale ranging from 1 (Never True) to 5 (Always True). The knowledge of learning subscale demonstrated a strong Cronbach's α of .80, while the regulation of cognition demonstrated a low Cronbach's α alpha of .57. Together, the combined scales demonstrated a Cronbach's α of .83.

Taking different perspectives. This 7-item subscale of "Perspective-Taking" has been taken from an original 28-item instrument (Davis, 1983) in order to capture DR component of leader complexity (Avolio & Hannah, 2008). An example item measuring this construct is "Before criticizing somebody, I try to imagine how I would feel if I were in their place." The self-report measure is rated on a 5-point Likert scale ranging from 1 (Not Well at All) to 5 (Extremely Well). This scale demonstrated a Cronbach's α of .75.

Intellectual openness. This 10-item scale has been taken from the International Personality Item Pool (Goldberg et al., 2006) as an adapted measure from Openness construct in the Six Factor Personality Questionnaire (Jackson, Paunonen, & Tremblay, 2000). These measures correlate well with each other (r = .70). This subscale is being used to capture participant's openness to intellectual experiences, as it relates to training success. An example item measuring this construct is "I am interested in many things."

The self-report measure is rated on a 5-point Likert scale ranging from 1 (Not Well at All) to 5 (Extremely Well). The measure demonstrated a Cronbach's α of .67.

Study 2

The second study was conducted to confirm the validity of the shortened LDR measure from Study 1. Study 2 examined whether the six-factor model would replicate using a different set of participants.

Participants and Design

Participants for Study 2 were recruited using Amazon.com Mechanical Turk (MTurk) Web site. Participants received $1.00 for completing the study. We decided in advance to recruit 250 participants. Those who responded to the MTurk posting completed a question before they started the survey to ensure that they were reading instructions.

Procedure

An on-line survey was created using a web-based survey tool (Qualtrics). Participants accessed the web-based survey through a link that was provided (Appendix E). Once directed to the Qualtrics website, participants were provided with the informed consent (Appendix F) and information regarding the purpose of the study and directions on how to complete the survey.

As in Study 1, participants were asked to complete self-report questions measuring various characteristics and traits that are related to leader developmental readiness (LDR). Including demographic questions and insufficient effort responding questions, the full measurement tool consisted of 64 items (Appendix G), and will take around 10-15 minutes to complete.

Measures

The shortened DR assessments from Study 2 were combined to create our instrument for data collection The current study is using four short-scale measures to assess motivation to develop (Center for Leadership & Strategic Thinking, 2014): a shortened goal orientation scale (Button et al., 1996), a motivation to-lead scale (Chan & Drasgow, 2001), and a motivation-to-learn measure (Ryan & Connell, 1989). The current study is also using two short-scale ability to develop measures (Center for Leadership & Strategic Thinking, 2014): a metacognitive ability scale (Schraw & Dennison, 1994) and a perspective taking scale (Davis, 1983).

Motivation to develop. The GO shortened scale, the motivation to learn shortened scale, and the motivation to lead shortened scale (from the result of Study 1) were used to measure participant's motivation to develop.

Learning goal orientation. The GO short scale consists of a 5-item instrument measuring the learning goal orientation of the participants. This self-report instrument is rated on a 5-point Likert scale ranging from 1 (Strong Disagree) to 5 (Strongly Agree).

Motivation to learn. The motivation to learn short scale is a 5-item instrument measuring the extent to which participants believe they are ready to acquire new and more advanced leadership behaviors during developmental challenges (Center for Leadership & Strategic Thinking,
2014). The self-report instrument is rated on a 5-point Likert scale ranging from 1 (Not At All True) to 5 (Extremely True).

Motivation to lead. The 5-item motivation to lead instrument has been adapted from the original scale which consisted of 27-items (Chan & Drasgow, 2001). The self-

report measure is rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Ability to develop. The meta-cognitive ability shortened scale, the perspective taking shortened scale, and the intellectual openness shortened scale (from the result of Study 1) measure participants' ability to develop.

Awareness of the way I think and learn. This 5-item scale has been adapted from the original 52-item measure (Schraw & Dennison, 1994) in order to assess participant's metacognitive ability and self-awareness (Avolio & Hannah, 2008). The self-report measure is rated on a 5-point Likert scale ranging from 1 (Never True) to 5 (Always True).

Taking different perspectives. This 5-item subscale of "Perspective Taking" has been taken from an original 28-item instrument (Davis, 1983) in order to capture DR component of leader complexity (Avolio & Hannah, 2008). The self-report measure is rated on a 5-point Likert scale ranging from 1 (Not Well at All) to 5 (Extremely Well).

Intellectual openness. This 4-item scale has been taken from the International Personality Item Pool (Goldberg et al., 2006) as an adapted measure from Openness construct in the Six Factor Personality Questionnaire (Jackson, Paunonen, & Tremblay, 2000). The self-report measure is rated on a 5-point Likert scale ranging from 1 (Not Well at All) to 5 (Extremely Well).

Insufficient effort responding items. The Insufficient Effort Responding Items included four items that were placed throughout the survey to determine if responses should be used. Items included "Please answer A" and "Should we use your data?" For

example, if a participant is asked to select A and they select any other letter or leave blank, there response will be deemed insufficient and will not be used in our analysis.

CHAPTER III: RESULTS

Study 1 Results

In order to test the research question, the original factor structure of the LDR questionnaire used by Chartoff (2019) was ran using his data and an analysis of the items in each factor was reviewed. The factor structure was then reran with the new set of items and compared to the original structure. The confirmatory factor analysis (CFA) was conducted to determine if a shorter survey scale could be created by comparing the original factor model to the shorter scale factor model. For Study 1, measurement and structural models were tested with software packages SPSS and AMOS v.19, using a CFA. The data were estimated using the maximum likelihood method. First, we excluded two measure: Perceived Organizational Support (Eisenberger & Huntington, 1986) and Measure of Trainee Improvement (Chartoff, 2019). Then we listwise deleted partial or incomplete responses leaving 89 participants in the data set. Next, we ran a CFA on the factor structure on the remaining six-measures used in Chartoff's (2019) LDR questionnaire. We compared the resulting fit statistics, the Comparative Fit Index (CFI) = .38 and the Root Mean Squared Error of Approximation (RMSEA) = .12. The CFI indicated a poor fitting model as it was below the general rule of good model fit of being greater than or equal to .90 and the RMSEA was indicated a poor fitting model also below the general rule of good model fit of being less than .08. After running the CFA for the six-factor model and reviewing the fit statistics, we reviewed how well each of the items loaded into the factors. We kept the five best items that loaded for each factor. The best items were determined by reviewing the regression weights, specifically, we

reviewed the Estimate and their *p* value. All factors had five items loaded except for intellectual openness which only had four. Four items were used for intellectual openness due to the lack of strength in the items loading in the factor model. The updated model had 29-items total (Appendix C). Then we updated the six-factor model (with the best loading items in each factor) and ran the updated six-factor model with Chartoff's (2019) data.

For examining the reliability and validity of the updated six-factor model, CFA was performed. Table 1 provides the fit indices for the model. The Comparative Fit Index (CFI) = 0.85. The Root Mean Squared Error of Approximation (RMSEA) = 0.08 The CFI was not greater than or equal to .90 but was greater than the CFI of the original six-factor model (with all items). The RMSEA for the updated six-factor model was at the conventional cutoff of .08 for a good fitting model. These fit indices do support the hypothesis that the proposed six-factor model fits the current data. This is encouraging since the current sample was well short of suggested size for reliable Confirmatory Factor Analysis results. As a result the total items in the updated LDR questionnaire was reduced to 29 items (Appendix C).

Table 1

Alternate Model Comparison for Study 1

Models	df	$\chi 2$	CFI	RMSEA	CMIN/df
Default	362	555.04	0.85	0.08	1.53
Independence	3144		0.38	.116	2.19

Study 2 Results

In order to further examine the research question, we tested the reliability and validity of the shortened LDR questionnaire in Study 1. Confirmatory factor analysis (CFA) was conducted to determine if the shortened survey scale would work with a different sample. For Study 2, measurement and structural models were tested with software packages SPSS and AMOS v.19, using a Confirmatory Factor Analysis (CFA). The CFA was based on a total of 209 participants. A total of 49 responses were listwise deleted from the dataset due to very partial responses due to failure of the insufficient effort responding items, duplicate entries, or missing data. These responses were deleted because it would not be scientifically accurate to impute that many missing data points. Then, descriptive statistics were examined for each of the scales being used for the CFA. All six surveys were on a five-point Likert scale (see Appendix D).

Table 2

Descriptive Statistics for Study 2

Scale	*M*	*SD*	*N*
Goal Orientation (GO)	3.99	0.66	209
Motivation to Lead (M2L)	3.61	0.87	209
Motivation to Learn (MLN)	3.81	0.69	209
Intellectual Openness (IO)	3.01	1.17	209
Perspective Taking (PT)	3.80	0.68	209
Meta-Cognition (MC)	3.89	0.61	209

Next, the CFA was performed. The data were estimated using the maximum likelihood method. The data came from the 29 questions on Likert-scale surveys measuring LDR (from Study 1). We hypothesized that the shortened six-factor model determined in Study 1 to be confirmed in the measurement portion of the model. We then analyzed the data set in AMOS and compared the resulting fit statistics. Table 3 provides the fit indices for the six-factor model. The Comparative Fit Index (CFI) is at 0.84 where an indication of mediocre model fit (conventional cut-off is CFI greater than or equal to .90). The RMSEA = .07, below the conventional cutoff of .08 for good model fit. The fit indices do support the hypothesis that the proposed six-factor model fits the current data.

Table 3

Initial Analysis Comparison for Study 2

Models	df	$\chi 2$	CFI	RMSEA	CMIN/df
Default	362	723.22	0.84	0.07	2.00
Independence	406		0.00	0.16	6.42

However, upon review of the covariance matrix (see Table 4), the latent variables goal orientation, motivation to learn, and meta-cognition had covariance greater than 1.0 meaning all the variance was covariance. We proceeded by running a one factor (see Table 5 for fit indices) and three factor model on goal orientation, motivation to learn, and metacognition in order to confirm all three factors are measuring the same construct. Per Occam's razor, we removed the goal orientation and meta-cognition latent variables and proceeded to run a CFA on the four factor model (motivation to lead, intellectual openness and perspective taking).

Table 4

Initial Covariance Matrix for Study 2

	GO	M2L	MLN	IO	PT	MC
Goal Orientation (GO)	-					
Motivation to Lead (M2L)	.56	-				
Motivation to Learn (MLN)	1.02	.81	-			
Intellectual Openness (IO)	-.30	.14	-.20	-		
Perspective Taking (PT)	.86	.49	.90	-.13	-	
Meta-Cognition (MC)	1.03	.63	1.04	-.16	.90	-

Table 5

One Factor Model for Study 2

Models	df	$\chi 2$	CFI	RMSEA	CMIN/df
Default	90	200.82	0.87	0.08	2.23
Independence	105		0.00	.20	9.05

The four-factor model was tested for reliability and validity using CFA. Table 6 provides the fit indices for the four-factor model. The Comparative Fit Index (CFI) = 0.91 indicating good model fit. The RMSEA = .06 is below the conventional cutoff of .08 for a good fitting model. The covariance were unchanged after removing the two redundant factors (Table 7). As a result of removing the goal orientation and meta-cognition factors, the total number of items in the model was reduced to 19 items, creating a more manageable approach of using the measure for research and real-world application.

Table 6

Secondary Model Comparison for Study 2

Models	df	$\chi 2$	CFI	RMSEA	CMIN/df
Default	146	261.95	0.91	0.06	1.79
Independence	171		0.00	.19	8.84

Table 7

Secondary Analysis Covariance Matrix for Study 2

	M2L	MLN	IO	PT
Motivation to Lead (M2L)	-			
Motivation to Learn (MLN)	.82	-		
Intellectual Openness (IO)	.15	-.17	-	
Perspective Taking (PT)	.50	.90	-.13	-

CHAPTER IV: DISCUSSION

The results of this research supports our research question to create a shortened valid survey instrument in order to assess employee LDR. The 81-item six-factor LDR instrument used by Chartoff (2019) was reduced to a 19-item four-factor LDR instrument in our final CFA model for Study 2. The fit indices of the six-factor model was CFI = .38 and RMSEA = .12. The fit indices of the four-factor model was CFI = .91 and RMSE = .06. The 19-item four-factor model showed superior fit as compared to the 81-item six-factor model. Through CFA we have created a measurement tool that consists of only 19 survey items to assess LDR. These findings give way to the recommendation made by Hannah and Avolio (2008) where they called for the need to create a practical measure with lean subscales for LDR, as they recommended a +100 item LDR assessment instrument.

Work conducted by Chartoff (2018) investigating the use of LDR to predict perceived improvement, indicated that the six scales used by him should be used in future research of LDR because they are reliable measures. Our research supports this claim with a few caveats. Our initial analysis in Study 2 supports the use of a shortened version of the LDR instrument. Although we did find evidence to support our shortened six-factor model, the results indicated that the shortened goal orientation, motivation to learn, and meta-cognition scales were tapping into the same latent construct. Closer examination of the items for motivation to learn and GO did seem to have overlapping themes. Both had a significant amount of questions regarding learning. Hannah (2006) suggested that metacognition was strongly related to higher levels of goal orientation.

While research conducted by VandeWalle et al. (2001) indicated that those with higher learning goal orientation or those who seek mastery tend to self-reflect on the learning process.

Limitations

This thesis does have a variety of limitations. The first major limitation is the sample used. We used Amazon Mechanical Turk in order to measure our shortened scale using a group with more variety, as suggested by Chartoff (2018). However, our study failed to identify the roles that these individuals hold and the length of time in the workforce. We believe that future research should capture various work demographics of its participants to gain a better understanding of the sample.

Another limitation of our study was the number of responses that were listwise deleted due to partial completion and failing the attention check questions. We believe some of these were the result of participants knowing they would still be compensated for partial completion and clicking through the survey mindlessly. This limitation was unavoidable but as research continues to use tools such as Amazon Mechanical Turk it may be important to consider how to maintain survey completion integrity.

Conclusion

Although further work is required to gain a more complete understanding of the LDR measurement instrument. Our findings lead the way for future research to begin to assess LDR in a practical and easier way with the use of shortened instrument. As the title of this thesis states “Who has time to develop?” is a take on the reality that resources in organizations are limited and without a practical LDR tool, organizations will continue to use subjective decision making to determine who is ready to develop as a leader. We

recommend future research to use our shortened LDR instrument in order to continue to refine and develop an optimal survey instrument for measuring LDR. Beyond LDR it is important to continue to assess the relationship between metacognition, motivation (to learn), and goal orientation in the field of Psychology.

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APPENDICES

Appendix A: Informed Consent

IRBF024 – Participant Informed Consent (ONLINE)

Language to be used for online surveys that qualify for "no more than minimal risk"

Use the following script as online informed consent including the protocol information. The administratively added items are highlighted in yellow.

Primary Investigator: Theodore Cristan
PI Department & College: MTSU Psychology Department
Faculty Advisor: Dr. Michael Hein
Protocol Title: Who Has Time To Develop? Creating A Practical Developmental Readiness Assessment Instrument
Protocol ID: 21-10242q **Approval Date:** 09/09/2020 **Expiration Date:** 09/30/2021

Information and Disclosure Section

1. **Purpose**: This research project is designed to help us evaluate the developmental readiness of leadership and leadership skill development.

2. **Description**: There are several parts to this project. They are:
   - You will first be asked to agree to the informed consent.
   - You will then be asked to complete a questionnaire consisting of 6 different scales related to leadership development and various demographic questions.
   - Participation in this opportunity is voluntary.
   - Finally, you will be given the opportunity to receive compensation for your participation, which is described more below.

3. **Duration**: The whole activity should take about 10-15 minutes.

4. **Here are your rights as a participant:**
   - Your participation in this research is voluntary.
   - You may skip any item that you don't want to answer, and you may stop the experiment at any time (but see the note below)
   - If you leave an item blank by either not clicking or entering a response, you may be warned that you missed one, just in case it was an accident. But you can continue the study without entering a response if you didn't want to answer any questions.
   - Some items may require a response to accurately present the survey.
   - leave an item blank by either not clicking or entering a response, you may be warned that you missed one, just in case it was an accident. But you can continue the study without entering a response if you didn't want to

answer any questions. Some items may require a response to accurately present the survey.

5. **Risks & Discomforts:**

There are no foreseeable risks, discomforts, or inconveniences associated with participation in this study. None of the measures present more than a minimal risk to participants. None of the data would reasonably place participants at risk of criminal or civil liability or be damaging to participants' financial standing, employability, insurability, reputation, or be stigmatizing.

6. **Benefits:**

There are no direct benefits to you. However, one benefit is that you will be providing important data for the progress of leadership development research.

7. **Identifiable Information**: The information that you provide will be used to inform the researchers of the relationship between developmental readiness and leadership development. The data will be deidentified by removing all personal identifying information so that individual responses cannot be identified in the data. Therefore, it can be ensured that your data will remain confidential.

8. You will be compensated $1.00 for participation and completion of the survey. Please note that you will be compensated only once for completing the survey. So do not take the survey more than once. Throughout the survey you will be asked a series of attention questions that will be used to determine the integrity of your survey responses.

9. **Confidentiality.** All efforts, within reason, will be made to keep your personal information private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

10. **Contact Information.** If you should have any questions about this research study or possibly injury, please feel free to contact Theodore Cristan by email, tc6h@mtmail.mtsu.edu, OR my faculty advisor, Dr. Michael Hein, at Michael.hein@mtsu.edu. You can also contact the MTSU Office of compliance via telephone (615 494 8918) or by email (compliance@mtsu.edu). This contact information will be presented again at the end of the experiment.

    By clicking on the arrow below you confirm that you have read the information above and give your consent to complete the survey.

You do not have to do anything if you decide not to participate. Please complete the following response section if you decide to enroll.

Participant Response Section

☐No ☐Yes I have read this informed consent document pertaining to the above identified research
☐No ☐Yes The research procedures to be conducted are clear to me
☐No ☐Yes I confirm I am 18 years or older
☐No ☐Yes I am aware of the potential risks of the study

By clicking below, I affirm that I freely and voluntarily choose to participate in this study. I understand I can withdraw from this study at any time without facing any consequences.
☐ NO I do not consent
☐ Yes I consent

Appendix B: IRB Approval

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
FWA: 00005331/IRB Regn.. 0003571

MIDDLE TENNESSEE STATE UNIVERSITY

IRBN007 – EXEMPTION DETERMINATION NOTICE

Friday, September 11, 2020

Protocol Title	***Who has Time to Develop? Creating a Practical Leader Developmental Readiness Assessment Instrument***
Protocol ID	**21-10242q**
Principal Investigator	**Theodore Cristan II** (Student)
Faculty Advisor	Michael Hein
Co-Investigators	Rick Moffett
Investigator Email(s)	*tc6h@mtmail.mtsu.edu; michael.hein@mtsu.edu*
Department/Affiliation	Psychology

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category ***(2) Educational Tests*** *(Qualtrics Survey)*. A summary of the IRB action and other particulars of this protocol are shown below:

IRB Action	**EXEMPT from furhter IRB review*** **
Date of Expiration	9/30/2021 *Date of Approval:* **9/11/20** *Recent Amendment:* NONE
Sample Size	TWO HUNDRED AND FIFTY (250)
Participant Pool	**Healthy adults (18 or older) - Workers from Amazon Mechanical Turk who are residents of United States**
Exceptions	1. Online consent followed by internet-based survey using Qualtrics is permitted (Qualtrics links on file). 2. Abbreviatred Amazon Mech Turk recruitment is permitted
Type of Interaction	☒ Virtual/Remote/Online Interview/survey ☐ In person or physical– Mandatory COVID-19 Management (refer next page)
Mandatory Restrictions	1. All restrictions for exemption apply. 2. The participants must be 18 years or older. 3. Mandatory ACTIVE informed consent. Identifyable information including, names, addresses, voice/video data, must not be obtained. 4. NOT approved for in-person data collection.
Approved IRB Templates	*IRB Templates:* Online Informed Consent *Non-MTSU Templates:* Recruitment Script
Funding	NONE
Comments	NONE

***Although this exemption determination allows above defined protocol from further IRB review, such as continuing review, MTSU IRB will continue to give regulatory oversight to ensure compliance.

Summary of the Post-approval Requirements:

The PI and FA must read and abide by the post-approval conditions (Refer "*Quick Links*" in the bottom):

- ***Final Report:*** The Faculty Advisor (FA) is responsible for submitting a final report to close-out this protocol before 9/30/2021; if more time is needed to complete the data collection, the FA must request an extension by email. REMINDERS WILL NOT BE SENT. **Failure to close-out (or request extension) may result in penalties** including cancellation of the data collected using this protocol or withholding student diploma.
- ***Protocol Amendments***: IRB approval must be obtained for all types of amendments, such as:
  - Addition/removal of subject population and sample size.
  - Change in investigators.
  - Changes to the research sites – appropriate permission letter(s) from may be needed.
  - Alternation to funding.
  - Amendments must be clearly described in an addendum request form submitted by the FA.
  - The proposed change must be consistent with the approved protocol and they must comply with exemption requirements.
- ***Reporting Adverse Events:*** Research-related injuries to the participants and other events , such as, deviations & misconduct, must be reported within 48 hours of such events to compliance@mtsu.edu.
- ***COVID-19:*** Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the FA.

COVID-19 Management:
The FA must enforce social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The FA must enforce the MTSU's "Return-to-work" questionnaire found in Pipeline must be filled and signed by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **FA's Responsibility:** The FA is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the FA must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

Post-approval Protocol Amendments:
The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would not result in the cancellation of the protocol's eligibility for exemption. ***Only THREE procedural amendments will be entertained per year*** *(changes like addition/removal of research personnel are not restricted by this rule).*

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Post-approval IRB Actions:
The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

Date	IRB Action(s)	IRB Comments
NONE	NONE.	NONE

Mandatory Data Storage Requirement:
All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additionally, the Tennessee

State data retention requirement may apply (*refer "Quick Links" below for policy 129*). Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects. **The IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this notice.** Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

- Post-approval Responsibilities: http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php
- Exemption Procedures: https://mtsu.edu/irb/ExemptPaperWork.php
- MTSU Policy 129: Records retention & Disposal: https://www.mtsu.edu/policies/general/129.php

Appendix C: Survey Scales

Survey Scales

Below, you will find the scales that make up the entirety of our survey. The items in bold font are the ones that were used. Including questions about demographics and attention checks, there will be 35 overall questions.

Demographics

1. **What is your ethnicity/race?**
    a. Male
    b. Female
2. **What is your ethnicity**
    a. White
    b. Hispanic or Latino
    c. Black or African American
    d. Native American or American Indian
    e. Asian/Pacific Islander
    f. Other

Attention Check Questions

1. **Please answer A.**
    a. A
    b. B
    c. C
    d. D
2. **I am currently taking an online survey.**
    a. Yes
    b. No
3. **Please answer D.**
    a. A
    b. B
    c. C
    d. D
4. **Should we use your data?**
    a. Yes
    b. No

Goal Orientation (Button, Mathieu & Zajac, 1996)
Please indicate on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

1. I prefer to do things that I can do well rather than things that I do poorly.

2. I'm happiest at work when I perform tasks on which I know that I won't make any errors.
3. The things I enjoy the most are the things I do the best.
4. The opinions others have about how well I can do certain things are important to me.
5. I feel smart when I do something without making any mistakes.
6. I like to be fairly confident that I can successfully perform a task before I attempt it.
7. I like to work on tasks that I have done well in the past.
8. I feel smart when I can do something better than most other people.
9. The opportunity to do challenging work is important to me.
10. When I fail to complete a difficult task, I plan to try harder the next time I work on it.
11. I prefer to work on tasks that force me to learn new things.
12. The opportunity to learn new things is important to me.
13. I do my best when I'm working on a fairly difficult task.
14. I try hard to improve on my past performance.
15. The opportunity to extend the range of my abilities is important to me.
16. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.

Motivation to Learn (Ryan & Connell, 1989)
Using a scale from 1 (not at all true) to 5(very true), please indicate how true each reason is for you. I will actively participate in leader self-development because…

1. I feel like it's a good way to improve my skills and my understanding of leadership.
2. Others would think badly of me if I didn't.
3. Learning to lead well is an important part of my career.
4. I would feel bad about myself if I didn't study leadership.
5. I would get a bad performance rating if I didn't do my supervisor suggests.
6. I believe my supervisor's suggestions will help me develop effectively.
7. My supervisor seems to have insight about how best to learn about leadership.
8. It's easier to follow my supervisor's suggestions than come up with my own leadership self-development strategies.
9. I would probably feel guilty if I didn't comply with my supervisor's suggestions.
10. It's important to me to do well at this.
11. It's interesting to learn more about the nature of leadership.
12. I would feel proud if I continued to improve at leading.
13. It's a challenge to really understand how to solve leadership problems.
14. I want others to see that I am a good leader.

Motivation to Lead (Chan & Drasgow, 2001)
Please read each statement below carefully and choose the one answer that best describes your agreement or disagreement using the scale 1 (strongly disagree) to 5 (strongly agree).

1. I am definitely not a leader by nature.
2. Most of the time, I prefer being a leader rather than a follower when working in a group.
3. I have a tendency to take charge in most groups or teams that I work in.
4. I am in my element when leading others.
5. I have always thought of myself as a leader.
6. I am the type of person who is not interested in leading others.
7. I believe I can contribute more to a group if I am a follower rather than a leader.
8. I am the type of person who likes to be in charge of others.
9. I see myself succeeding at leadership challenges.
10. I usually want to be the leader in the groups that I work in.
11. I know exactly what it takes to lead others.
12. I am the type who would actively support a leader but prefers not to be appointed as leader. **13. I was born to lead.**
14. I am seldom reluctant to be the leader of a group.
15. I have the characteristics that people associate with leadership.

Awareness of the Way I Think and Learn (Metacognitive Ability) (Schraw & Dennison, 1994).
Please respond to the below items by indicating how true or false each statement is about you on a scale from 1 (never true) to 5 (always true).

1. I try to use strategies that have worked in the past.
2. I understand my intellectual strengths and weaknesses.
3. I know what kind of information is most important to learn.
4. I ask myself if I have considered all options when solving a problem.
5. I am good at organizing information.
6. I have a specific purpose for each strategy I use.
7. I learn best when I know something about the topic.
8. I know what the trainer expects me to learn.
9. I am good at remembering information.
10. I use different learning strategies depending on the situation.
11. I have control over how well I learn.
12. I periodically review to help me understand important relationships.
13. I summarize what I've learned after I finish.
14. I can motivate myself to learn when I need to.
15. I am aware of what strategies I use when I study.
16. I find myself analyzing the usefulness of strategies while I study.
17. I use my intellectual strengths to compensate for my weaknesses.
18. I am a good judge of how well I understand something.
19. I find myself using helpful learning strategies automatically.

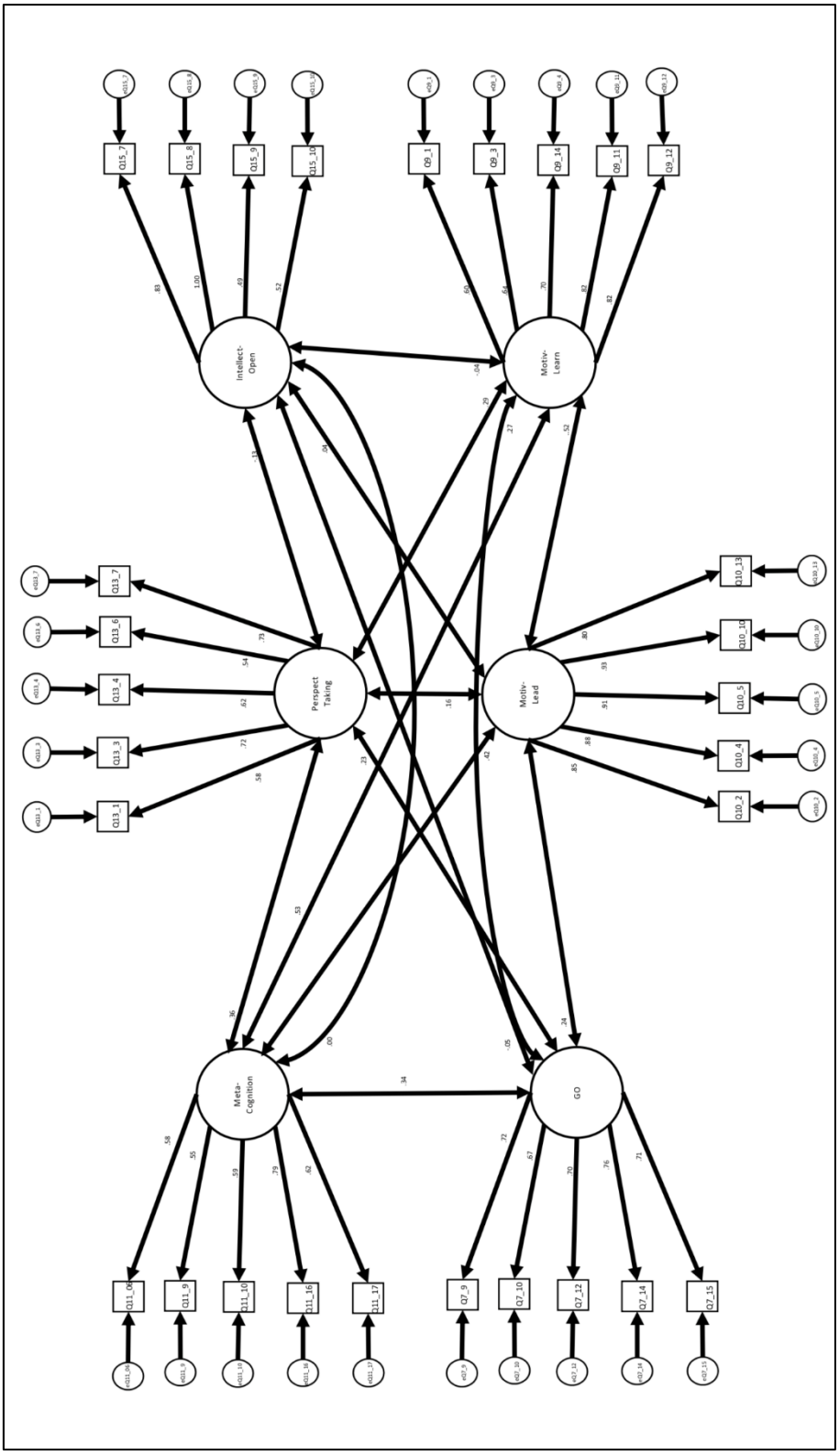
Taking Different Perspectives (Davis, 1980)
Please indicate how well each following item describes you on a scale from 1 (does not describe me well) to 5 (describes me very well).

1. **Before criticizing somebody, I try to imagine how I would feel if I were in their place.**
2. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.
3. **I sometimes try to understand my friends better by imagining how things look from their perspective.**
4. **I believe that there are two sides to every question and try to look at them both.**
5. I sometimes find it difficult to see things from the "other guy's" point of view.
6. **I try to look at everybody's side of a disagreement before I make a decision.**
7. **When I'm upset at someone, I usually try to "put myself in his shoes" for a while.**

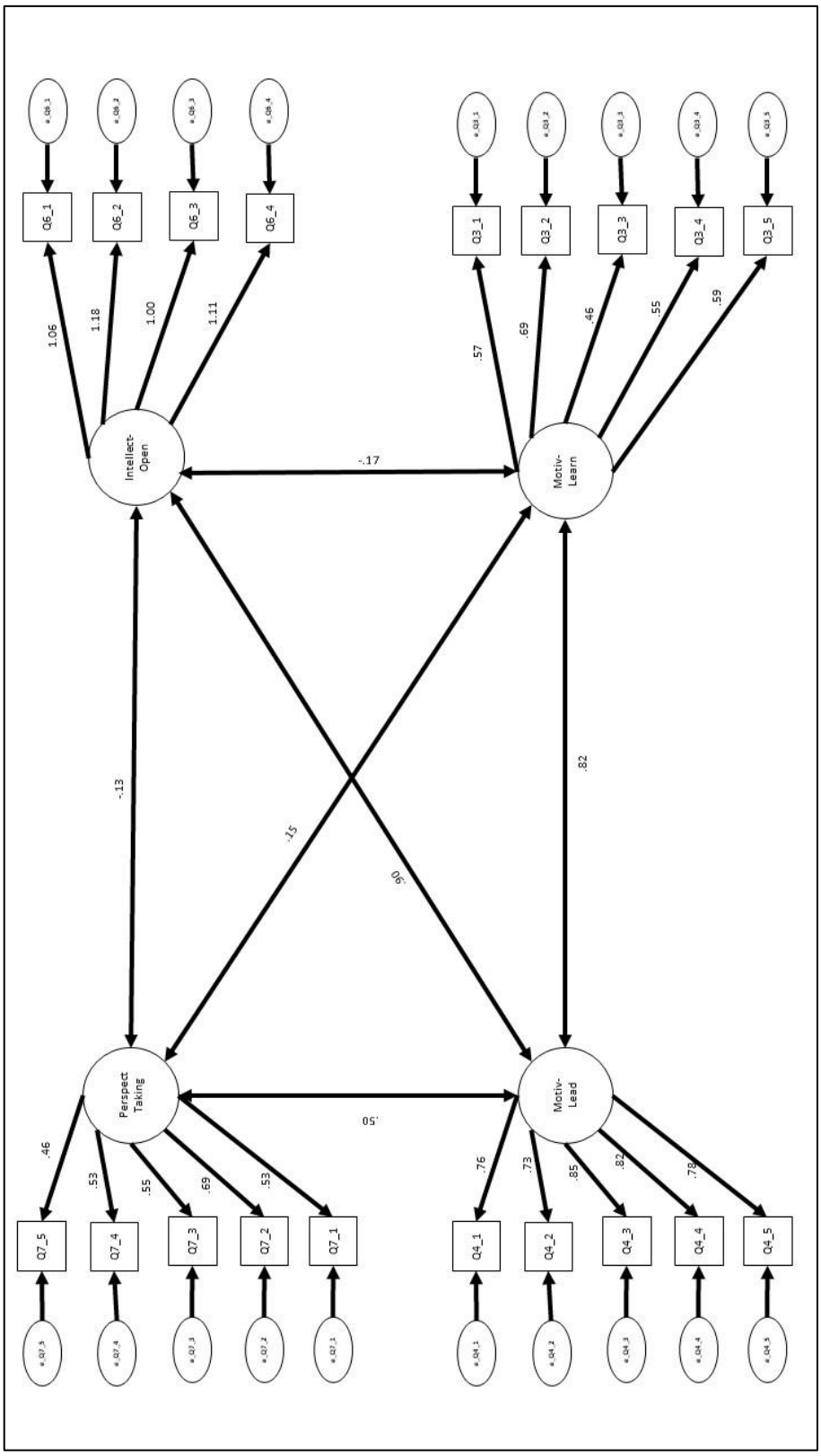
Intellectual Openness (Goldberg et al., 2006)
Please indicate how well each following item describes you on a scale from 1 (Not well at all) to 5 (Extremely Well).

1. I carry the conversation to a higher level.
2. I am interested in many things.
3. I prefer variety to routine.
4. I want to increase my knowledge.
5. I am open to change.
6. I prefer to stick with things that I know.
7. **I am not interested in abstract ideas.**
8. **I am not interested in theoretical discussions.**
9. **I try to avoid complex people.**
10. **I rarely look for a deeper meaning in things.**

Appendix D: Study 1 CFA Model
(Standardized Path Coefficients/Covariance Estimates Shown)



Appendix E: Study 2 CFA Model
(Standardized Path Coefficients/Covariance Estimates Shown)


Intellect-
Open
Motiv-
Learn
Perspect
Taking
Motiv-
Lead
Q6_1
Q6_2
Q6_3
Q6_4
Q3_1
Q3_2
Q3_3
Q3_4
Q3_5
Q7_5
Q7_4
Q7_3
Q7_2
Q7_1
Q4_1
Q4_2
Q4_3
Q4_4
Q4_5
1.06
1.18
1.00
1.11
.57
.69
.46
.55
.59
-.17
-.13
.15
.50
.82
.50
.46
.53
.55
.69
.53
.76
.73
.85
.82
.78