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THE MEASUREMENT OF MOTIVATION: EXAMINING THE MEASUREMENT
PROPERTIES OF THE MOTIVATION ASSESSMENT SYSTEM

by

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B.A. University of Maryland, College Park, 2008

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Industrial and Organizational Psychology
in the College of Sciences
at the University of Central Florida
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Major Professor: Barbara Fritzsche and Dana Joseph

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ABSTRACT

The current study investigated the Pritchard-Ashwood (P-A) Theory of Motivation (Pritchard & Ashwood, 2008) by examining a measure of P-A Theory labeled the Motivation Assessment System (MAS). P-A Theory combines prior motivation theories such as expectancy theory, goal setting theory, justice theory, and needs theory and consolidates them into one integrated theory of motivation. In essence, P-A theory posits that one's motivation is determined by four perceptions, including the extent to which one believes: (a) his/her actions will lead to results, (b) his/her results will lead to positive evaluations, (c) his/her evaluations will lead to positive outcomes, and (d) his/her outcomes will satisfy his/her needs. The MAS is designed to capture P-A Theory by assessing these four perceptions, and this dissertation examined tenets of P-A Theory by investigating the measurement properties of the MAS via confirmatory factor analysis. Findings showed that the model set forth by P-A Theory had the best fit compared to the other competing models when analyzing MAS data, suggesting the MAS is an appropriate measure of P-A Theory. This research should help to bridge the gap between motivation theory and practice by providing initial evidence of support for a practical measure that captures the full spectrum of employee motivation as set forth in P-A Theory. Recommendations for future research using the MAS to study motivation are suggested.

I dedicate this dissertation to my beloved grandmother, Blanche Ettinger. Blanche was a strong supporter and pursuer of higher education, earning a doctorate in Business Education from New York University. She was a professor of Business Education at New York University as well as Bronx Community College of The City University of New York. Blanche's priority was educating her students and grandchildren to her best ability. She would have been proud of me as I follow in her path by completing my doctorate.

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INTRODUCTION

The motivation of human beings has been discussed and debated by psychologists for over a century, and how motivation relates to the workplace has been studied by organizational scientists since the famous “Hawthorne Studies” (Roethlisberger & Dickson, 1939). Early motivation theorists such as Atkinson (1958) described motivation as the result of arousal and subsequent behaviors that ultimately lead to specific outcomes or effects. Simultaneously, other motivation theorists were developing a broader definition of the motivation construct. One of these scientists, Maslow, described motivation as something that is “constant, never ending, fluctuating and complex...an almost universal characteristic of practically every organismic state of affairs” (Maslow, 1954, p. 69). These ideas led to the modern theories of motivation such as needs theory (Maslow, 1943), justice theory (Adams, 1966), goal setting theory (Latham & Locke, 1979), and expectancy theory (Vroom, 1964). These more recent definitions explain motivation as the basis of all human behavior (see: Bandura & Locke, 2003; Kanfer & Heggestad, 1997; Latham & Pinder, 2005; Lee, Locke, & Phan, 1997; Locke & Latham, 1990; Naylor, Pritchard, & Ilgen, 1980; Pritchard & Ashwood, 2008). Accordingly, this is an important construct to industrial and organizational psychologists because predicting, explaining, and improving behavior in the workplace is of central importance to both academics and practitioners in the field.

Although modern theories of motivation have been helpful in demonstrating how workers’ motivation is influenced by the amount of effort they are willing to utilize (Fox, Scott, & Donohue, 1993; Locke & Latham, 1990; McClelland, 1951; Mitchell & Daniels, 2003;), how they direct that effort (Bandura & Locke, 2003; Locke & Latham, 1990; McClelland, 1951;

Mitchell & Daniels, 2003; Fox, Scott, & Donohue, 1993), and how long they persist in expending that effort (Bandura & Locke, 2003; Fox, Scott, & Donohue, 1993; Locke & Latham, 1990), researchers have not attempted to account for one another in explaining the motivation process and how it impacts employee performance (Latham & Pinder, 2005; Locke & Latham, 2002; McIntire & Levine, 1991; Spector, 2006; Locke, 2003). Specifically, each of these modern theories was created independently as part of a narrow theoretical paradigm or area of interest, instead of cumulatively building upon each other (Forbes, 2011). This has led to a multitude of distinct motivation theories that seem to accurately predict their respective criteria but remain in need of integration in order to complete a broad theory of motivation.

Furthermore, this piecemeal approach to the study of motivation has also led to contradictions among separate motivation theories. One classic example of this issue is the apparent contradiction between expectancy and goal setting theories of motivation (Locke & Latham, 2002). Specifically, expectancy theories of motivation dictate that if a goal is relatively difficult, one would have a lesser ability to accomplish the goal. Therefore, the individual would be less motivated to perform (Vroom, 1964). However, goal setting theory predicts better performance when goals are more difficult to achieve (Locke, 2000). Although there has been empirical support for both theories (Spector, 2006), this contradiction demonstrates one of several substantial disconnects between theories of motivation.

In order to resolve these conflicts and provide an integrated theory of motivation, Pritchard and Ashwood (2008) developed an integrated framework that includes the tenets of prior theories of motivation, termed *Pritchard-Ashwood (P-A) Theory*. This framework defines motivation as “the process used to allocate energy (from a finite energy supply called an Energy Pool) to maximize the satisfaction of needs” (p. 6). This reflects the traditional definition of

motivation, which states that our time and energy are distributed to various actions by determining effort, direction, and persistence (Naylor, Pritchard, & Ilgen, 1980). In other words, a person must determine how much of their energy they should exert (i.e., effort), where they exert that energy (i.e., direction), and how long they exert that energy (i.e., persistence) to satisfy a desired need. This general framework has been suggested to encompass all major theories of human motivation including needs, justice, expectancy, and goal setting theories (Naylor, Pritchard, & Ilgen, 1980). Having all of these theories of motivation included in one overarching theory is significant because there has been support for each theory separately (Spector, 2006), however, no one theory has explained the overlaps and differences among the theories. As an integrated theory, the P-A approach to the construct of motivation will hopefully serve as a solution to the problem of understanding why motivation is lacking in a workplace and how it can be improved. Because P-A Theory has yet to be tested, this dissertation examines its tenets using a measure specifically developed for the theory (i.e., the Motivation Assessment System)

I begin by briefly reviewing the history and major theories of motivation. I will then explain the structure of P-A Theory and its potential for understanding work motivation. Finally, I will discuss the Motivation Assessment System (MAS), a tool designed by Pritchard (2011) to measure the constructs inherent to P-A Theory as well as the previous work done with this measure. Ultimately, the current study seeks to examine the structural properties of the MAS. Specifically, confirmatory factor analysis (CFA) is used to verify the internal structure and measurement properties of the MAS. Support for the proposed structure of the MAS will provide preliminary support for its usefulness in testing hypotheses concerning motivation in research settings, in applications involving motivation in organizations, and provides initial evidence for the tenets of P-A Theory as a whole.

PAST THEORIES OF MOTIVATION

There are several widely accepted theories of motivation, each of which has been substantiated to a lesser or greater extent. However, individually, each fails to account for the others, by focusing on distinct aspects of the motivation process (Locke & Latham, 2004). Due to this lack of a systematic approach toward the advancement of a broad theory of motivation, Locke and Latham (2004) have called for the development of an all-inclusive “metatheory” (pg. 389) of work motivation. In the following sections, I will discuss four major theoretical frameworks of motivation: a) needs theory (Maslow, 1943); b) justice theory (Adams, 1966); c) goal setting theory; (Latham & Locke, 1979) and d) expectancy theory (Vroom, 1964). For each framework, I review the evidence supporting each, and consider the respective problems noted by past researchers. These particular theories are discussed because they encompass most of the progress that has been made in the field of work motivation and demonstrate how this journey has advanced by branching off into different directions (Spector, 2006). This analysis will inexorably lead back to the need to create a metatheory that can incorporate each of these theories (Locke & Latham, 2004), setting up the subsequent sections detailing the tenets of P-A theory and the MAS.

Needs Theories

Needs-based theories are constructed on the idea that our inherent needs serve as dispositions to action. When these actions are rewarded, the dispositions are thought to be strengthened, resulting in stronger needs (Franken, 2007). Traditional hierarchical needs theories focus on the variations in needs within individuals over time (e.g., Maslow, 1943). Needs differ within persons over time due to how actions are rewarded and the environment of the individual

(Spector, 2006). Further, needs differ between persons as a result of different environmental circumstances and reward systems. Restated, traditional hierarchical needs theories dictate that different people experience different strengths of the same need and different strengths of different needs. In sum, actions are based on what behavior will relieve the most stress-inducing need.

Maslow (1943), Murray (1938), McClelland (1951, 1961), Atkinson (1958), and Herzberg (1968) had the greatest impact on needs theories. Their ideas suggested that all human behavior is based off of a desire to fulfill physiological needs (e.g., hunger, thirst, achievement). For example, McClelland (1971) argued that each of these needs could compete for a person's attention in directing behaviors at the same time and Maslow (1943) explained that a need must be unmet to be motivating.

Although there is supporting evidence for the validity of needs theories, there is little practical significance that has been displayed in explaining why a person would choose specific behaviors given specific situational and outcome variables (Latham & Pinder, 2005). Most of the research on needs theories has not been able to demonstrate strong relationships with performance, possibly due to the fact that traditional needs theories deal with distal constructs that are far removed from actual performance. Up to this point, the largest impact that needs theories have had on performance in the workplace has been by stressing to managers the importance of meeting employee's expectations at work (Spector, 2006). The needs theory literature shows an expansive set of ideas and approaches to the construct of motivation; however, it clearly is not able to encompass the entire construct in one easy-to-understand, succinct theory that can be evaluated successfully.

Justice Theories

Justice theories of motivation developed based on the concept that there are norms of fair treatment that are expected by employees from their organizations. This theory states that workers value fairness and that their motivation stems from a need to maintain the fairness in the relationship between themselves and the organization (Spector, 2006). Justice theory was conceptualized by Adams (1965) who developed equity theory. Adams explained that a person is motivated to perceive a level of fairness or equity in their dealings with other people as well as with their organizations. He notes that employees who perceive that they are in an inequitable situation will feel dissatisfied and will experience emotional tension that they will be motivated to reduce.

More recently, Fairness theory has become more prevalent than Equity theory (Cropanzano, Byrne, Bobocel, & Rupp, 2001). Fairness theory does not focus on employees' perceptions that there is a fair allocation of rewards, but rather if the distribution of the rewards and the procedure by which the rewards are allocated is fair (Folger & Cropanzano, 2001). This theory is composed of distributive justice and procedural justice. Distributive justice describes the fairness with which rewards are found among employees while procedural justice deals with the fairness of the process used to hand out these rewards. Research has generally supported the tenets of fairness theory. For example, Cole and Latham (1997) demonstrated that when supervisors followed procedural justice guidelines, human resource managers and labor lawyers judged the supervisors to be more fair than the supervisors who did not follow procedural justice guidelines. Furthermore, employee perceptions of fairness have been significantly correlated with job performance, citizenship behaviors, job attitudes, theft, exploitation, self-sacrificing decision allocations, retribution, workplace revenge, and sabotage (Latham, 2007).

Despite the strong support for the many different organizational outcomes that justice theory has been linked to, there still remains no unified theoretical approach to organizational justice (Latham, 2007). Locke (2003) argues that the current justice theory framework cannot capture all the dimensions that justice theory is said to be able to evaluate. Greenberg, an expert in the field of organizational justice, goes as far as to say that only the umbrella term “organizational justice” should be used and not to include the word *theory* to describe the current literature available as a grand theory has still not been developed that refines and consolidates the current conceptualizations of justice (Latham, 2007). Therefore, there still remains the need for an integrated, overarching theory that can bring the justice literature together under one theory.

Goal Setting Theories

Goal setting theories of motivation have played a major role in recent motivation theory, especially in regard to motivation in the workplace. Goal setting theory proposes that goals can increase performance when the goals are specific, challenging, employees are aware of the goals, and when they have participated in creating these goals (Latham, Winters, & Locke, 1994; Locke & Latham, 1990). Goals work by providing a person with focused high expectations of performance. However, if these expectations of performance are perceived to be too difficult by employees, their motivation will suffer (Lee, Locke, & Phan, 1997). When the above criteria for goal setting are met, goals work as a motivating factor in four ways. First, they allow a person to direct their attention on what needs to be done. Second, they mobilize effort and energy to the task at hand. Third, goals cause a person to persistently work towards accomplishing the goal.

Finally, they help in the creation of strategies to accomplish the goal (Kanfer & Heggestad, 1997).

In 2002, Locke and Latham performed a meta-analysis of 35 years of goal setting research. They found that practice of setting specific and difficult goals had increased performance on over 100 different tasks, dealing with over 40,000 participants, across eight countries. This comprehensive evaluation was the capstone of the work looking at goal setting, solidifying its effectiveness as a motivational tool to increase performance in the workplace.

While goal setting theory appears to have an abundance of support, some questions about the theory remain. For example, goal setting does not account for how organizational variables or resource availability can have a major impact on how well goal setting works. Goal setting can also prove to be dysfunctional if employees goals do not encompass all of the important work that must be done for the organization to be successful. Recent work on goal setting theory has tried to fill these gaps by drawing connections between the traditional goal setting model and rewards, work satisfaction, and self-efficacy (Locke & Latham, 2002).

Goal setting theory has much support in the field of Industrial and Organizational Psychology as it lays out easy to comprehend and easy to follow criteria regarding what an organization can do to improve the motivation of their employees. Additionally, the process of goal setting seems to make sense and is something that, through general life experiences, most everyone has experience with formally or informally. The problem with the goal setting theory however is not one of theoretical misdirection, but rather one of theoretical deficiency. Without taking into account organizational, situational, and individual variables, the theory will remain incomplete and will not be able to entirely explain the overarching construct that is motivation.

Expectancy Theories

According to expectancy theories, a person's motivation comes from the anticipation that effort will lead to achieving a valuable outcome (Vroom, 1964). If people do not believe that rewards will be contingent on their behavior, or if they feel that rewards are not valuable, they will not be motivated to perform. This theory of motivation is defined through the processes of valence, instrumentality, and expectancy (VIE) for behavior (Locke, 1975). Valence would be described as the strength of an affective or attitudinal perspective that one places on a specific outcome. Instrumentality refers to the strength of the connection between the performance and the outcomes. Expectancy is described as how likely one feels their effort will lead to the desired performance.

Vroom (1964) explained that these three factors combine to make up a person's motivational force and that this relationship could be explained with a mathematical equation: $\text{Motivation} = \text{Expectancy} \times \sum(\text{Valences} \times \text{Instrumentalities})$. If the VIE processes combine to create a high motivation score, then the employee will be motivated to perform the task at hand. There are two important takeaways from this equation. The first is that these three factors are dependent on each other. Expectancy is an effort to performance score, Instrumentality is a performance to outcomes score, and Valence is an outcome to reward strength score. Accordingly, the second important takeaway is that if any one factor is low, a person's overall motivation to perform the task in question will be low.

Porter and Lawler (1968) wanted to expand upon Vroom's theory to provide a better explanation for what creates motivational force as well as provide a model that could be better validated. In their model, they combined the VIE components of Vroom's model with individual abilities and traits arguing that these factors would have an impact on a person's overall

motivational force. Porter and Lawler (1968) believed this was an important addition because a person could believe there is a strong connection between the value and instrumentality of their effort and outcomes, but they would still have a weak motivational force if there were limitations on their ability to actually carry out the necessary actions. These additions to Vroom's model were able to garner some limited validation and transform expectancy theories of motivation into a more process-based theory. The expectancy approach has had empirical support demonstrating that performance is correlated with individual components of the theory as well as studies showing multiplicative combinations of the components relating to performance (Fox, Scott, & Donohue, 1993; Van Erde & Thierry, 1996).

Naylor, Pritchard, and Ilgen's (1980) Theory of Behavior in Organizations

Naylor, Pritchard, and Ilgen (1980) built upon the existing knowledge of expectancy theories of motivation and combined it with other motivational domains as well as other areas of organizational behavior such as individual differences, attitudes, personality, and environmental variables, among others, to create a model that is able to represent an overall organizational behavior process. This came to be known as NPI theory. Although there has been concern voiced over the validity of expectancy research in the past, Kanfer (1990) stated that NPI's approach to expectancy theory holds great promise and Dalal and Hulin (2008) have stated that NPI theory contains the most comprehensive representation of expectancy theories of motivation.

Kanfer (1990) explains that NPI theory acts as a resource allocation approach to motivation, which allows us to examine the proportion of personal resources one devotes to a task rather than simply asking whether or not a person is motivated. NPI theory defines

motivation as “...the process of allocating personal resources in the form of time and energy to various acts in such a way that the anticipated affect resulting from these acts is maximized” (Naylor, Pritchard, & Ilgen, 1980, p. 159). Succinctly, NPI theory explains motivation as the process that determines how one’s energy and time (i.e. resources) are used to satisfy needs (Latham & Pinder, 2005). The central motivational components of this theory deal with the direction, intensity, and persistence of the resource allocation process. This theory works in the context of a future-oriented concept in that a person anticipates the amount of need satisfaction that they will receive when an outcome is achieved. The relationship that the person perceives between applying their resources to actions and the resulting need satisfaction, determines how much of their resources they will apply to the specific behavior in question (Latham & Pinder, 2005).

NPI theory has gained support from studies evaluating methods to reduce role stress (Dougherty & Pritchard, 1985), and improving productivity management within organizations (see Pritchard, 1990; 1992; 1995; Pritchard, Harrell, DiazGrenados, & Guzman, 2008). However, with the exception of this small group of empirical examinations, the scientific community has yet to examine or test NPI theory. Even though NPI theory took an extensive approach in explaining organizational behavior, this approach also ended up hampering its ability to be widely tested and accepted. Latham and Pinder (2005) have stated that “empirical studies are needed to test the predictive and explanatory power of this theory” (p. 502). Pritchard (personal communication, December 1, 2010) has said of NPI theory that it was not designed or written in a way that would make it approachable for academics or practitioners. Latham (personal communication, March 11, 2012) has said that while NPI theory was impressively extensive and encompassing, it was just too complicated to be useful by most researchers and

that those who had the ability to understand it did not want to take the inordinate amount of time that would be necessary to establish a firm grasp of the theory. These issues led Pritchard to taking a more simplified approach to NPI theory by retooling it in the form of the Pritchard-Ashwood (2008) Theory of Motivation.

In summary, it can be seen that a lot of research and thought has gone into the study of motivation over the last century. However, a number of issues remain unresolved. Most importantly is the problem that each of the different approaches to motivation does not try to be inclusive of the other approaches. This practice has led to theories of motivation that accurately explain a narrow range of behavior, while not being able to explain other aspects of motivation outside of their defined realm (e.g., justice theories of motivation have no aspects of goal setting integrated into them). Therefore, each theory of motivation is deficient in some way when it comes to explaining the overarching construct of motivation. Locke and Lathom (2004) call for a metatheory of motivation to be created to address this problem so that motivation can succinctly be described with one integrated theory.

THE PRITCHARD-ASHWOOD THEORY OF MOTIVATION

P-A Theory of Motivation has its origins within NPI theory. In the workplace, one of the most basic and important needs is to perform well on the job. Figure 1 is a model of P-A Theory of Motivation including the five main components of the motivation process: actions, results, evaluations, outcomes, and need satisfaction. According to P-A Theory, the strength of a person's motivation is determined by the strength of the relationship between each component. For high levels of motivation, there must be a strong connection between actions and results, results and evaluations, evaluations and outcomes, and outcomes and need satisfaction. Below, I define each of these components of the motivation process and how they relate to each other.

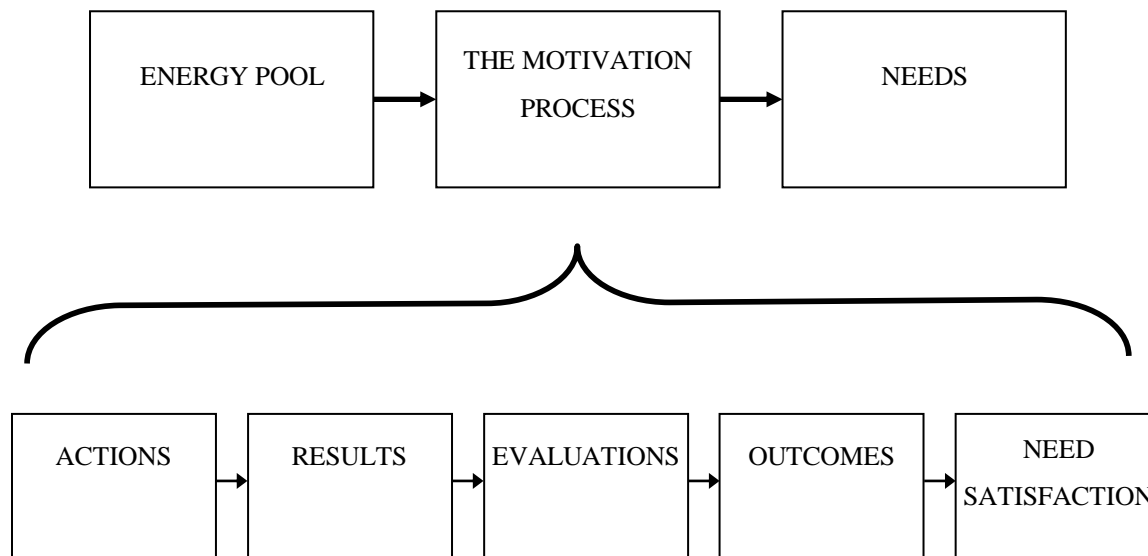


Figure 1: The Pritchard-Ashwood (2008) Theory of Motivation¹

¹ From "Managing Motivation: A Manager's Guide to Diagnosing and Improving Motivation," by R. D. Pritchard and E. Ashwood, 2008, p. 20. Copyright 2008 by Taylor & Francis Group, LLC. Adapted with permission of the author.

Actions

Actions refer to the activities, behaviors, tasks, or thoughts that one carries out by directing their resources of energy and time to these behaviors (Pritchard & Ashwood, 2008). Within the motivation process, this is the aspect that the individual has the most control over. One's effort put into the action is based on the intensity of the energy and the persistence with which they continue to apply the energy to the actions (Pritchard, 2011). The direction of this effort is determined by the expectation of fulfilling important needs through the effort that is being applied to the actions. For example, an employee might have to take her energy and direct it towards writing up a report. This can be seen in Figure 1 in which a person's energy is directed at the motivation process and the first link in the motivation process chain is the action (e.g., writing a report).

Results

The products of actions are referred to as *results* (Pritchard, 2011), as depicted in the second box of the motivational process in Figure 1. Results may or may not have significant value and they do not have to always be tangible. For example, the action of an employee writing a report leads to the result of a completed report.

Actions to Results

The first connection or relationship in the motivational process that is proposed by P-A theory is the *action to results connection*. This connection is graphically represented in Figure 1 as the arrow connecting Actions to Results. This connection explains the perceived strength of the relationship between the energy that one applies to actions and what the results of these actions will be. The strength of this connection is determined by how strongly an individual

believes that their actions will produce the desired results. This belief is affected by other factors such as if the person possesses the necessary knowledge and abilities to perform the action correctly, whether this person has the tools and resources to carry out the action, and whether the person has enough time and energy to perform the task (Pritchard, 2011). For example, the action of an employee writing up a report leads to the result of a completed written report. The strength of this connection for the employee could be strong because she believes that she possess the necessary knowledge and abilities to write the report, she has the tools and resources to write the report, and she has enough time and energy to complete the report.

Evaluations

Each result does have some degree of value determined through *evaluations* of results. (Evaluations can be seen in the third box of the motivational process depicted in Figure 1.) Evaluations of results can be derived from multiple evaluators with each evaluator possibly having a different method of assigning value to results (Pritchard, 2011). In the typical organizational setting, there are *self*, *informal*, and *formal* evaluations. A self-evaluation involves how the person in question evaluated his or her own result. An informal evaluation involves an evaluation of a person's result from someone else through unofficial channels such as a coworker or manager advising the person in passing that s/he did a great job on last week's presentation, for example. Lastly, a formal evaluation involves something such as an annual performance evaluation. In our example, the result of the employee's written report would be evaluated by herself (e.g., she may believe she wrote an excellent report), by her supervisor in a formal manner (e.g., her supervisor could approve her report for submission to the client), and by

her supervisor and/or coworkers in an informal manner (e.g., her supervisor and/or coworkers could tell her in passing that they are impressed with the report she wrote).

Results to Evaluations

The *results to evaluations connection* evaluates how one perceives the level of the result that they created and the level of evaluation that they expect for it. A strong connection here is dependent on well-defined expectations regarding which results are more important to the organization. Because there is the possibility of multiple raters in this situation (i.e., self, formal, informal), there also is the possibility of conflicting evaluations. A consistent evaluation across raters is another determining factor of the strength of this connection (Pritchard, 2011). In our example, the employee could perceive that her written report would lead to positive self-evaluations, a positive formal evaluation, and positive informal evaluations from the people that she works with. This connection is represented graphically in Figure 1 as the arrow going from Results to Evaluations.

Outcomes

Outcomes are the products that result from these evaluations (Pritchard, 2011). Internal outcomes such as negative or positive emotions and external outcomes such as pay raise or promotions come from evaluations of results that were produced by a person's actions. Outcomes are utilized to satisfy our needs. For example, the employee's positive self-evaluation of her report could lead to an outcome of feeling proud, the formal evaluation of approving the report for submission to the client could lead to an outcome of an on-the-spot cash reward, and the informal evaluation of her supervisor and/or coworkers saying that they are impressed with

the report could lead to an outcome of feeling respected. Outcomes can be seen in Figure 1, following evaluations in the motivational process.

Evaluations to Outcomes

The *evaluations to outcomes connection* expresses the strength of the relationship between the level of evaluation and the level of outcome. This connection is represented graphically in Figure 1 as the arrow going from Evaluations to Outcomes. Due to the possibility of there being different evaluators (i.e. self, formal, and informal), there is also the possibility that different evaluators would provide different outcomes for the same evaluations. Therefore, it is important that similar evaluations consistently lead to similar and justifiable levels of outcomes. The strength of this connection is determined by the level and consistency of outcomes and whether they fairly match the level of evaluation (Pritchard, 2011). In our example, the employee could perceive that the self, formal, and informal evaluations she has received would lead to positive outcomes such as feeling proud, respected, or getting promoted.

Need Satisfaction

Need satisfaction is what people are motivated towards accomplishing with their actions (Pritchard, 2011). This is what people perceive as being required to satisfy their Needs at the end of the motivation chain. An evaluation of high praise from your boss on a piece of work could lead to the outcome of positive internal feelings which are important because these feelings lead to the need satisfaction of having high self-esteem or job satisfaction. Need Satisfaction can be seen in Figure 1 following outcomes. The Figure shows how need satisfaction is the last step of the motivation process and it represents what a person thinks they need to actually satisfy the Needs variable following the motivation process.

Outcome to Need Satisfaction

The *outcome to need satisfaction connection* exhibits how important the outcomes are to fulfilling a person's perceived needs. This connection can be seen graphically in Figure 1 as the arrow going from Outcomes to Need Satisfaction. This connection explains the relationship between the degree of outcome received and the associated degree of anticipated need satisfaction. It is important to note here that what determines the strength of this connection is the person's perceptions of how well they feel the outcomes they have received will satisfy their needs, not how much they actually do satisfy their needs (Pritchard, 2011). For example, the employee might perceive that her outcome of feeling pride will help to satisfy her need to feel good about herself. She could expect that the outcome of being awarded an on the spot cash bonus will satisfy her need to provide for herself and/or her family. She also might expect that the outcome of feeling respected will help to satisfy her need to feel that she is valued.

Pritchard-Ashwood Theory as an Integrated Theory of Motivation

What is unique about P-A Theory of Motivation is that, unlike other theories of motivation, P-A Theory is a holistic theory that incorporates aspects of other major theories of motivation. Below, I examine how expectancy, goal setting, need, and justice theories of motivation are all incorporated within P-A Theory of Motivation. The intent of this section is not to demonstrate that P-A Theory of Motivation is superior to the other theories available, but rather to describe how comprehensive the theory is so that it can be justified later on as a valid theory for the basis of this study. Figure 2 shows P-A Theory along with the previous theories of motivation that have been discussed and how they map onto P-A Theory.

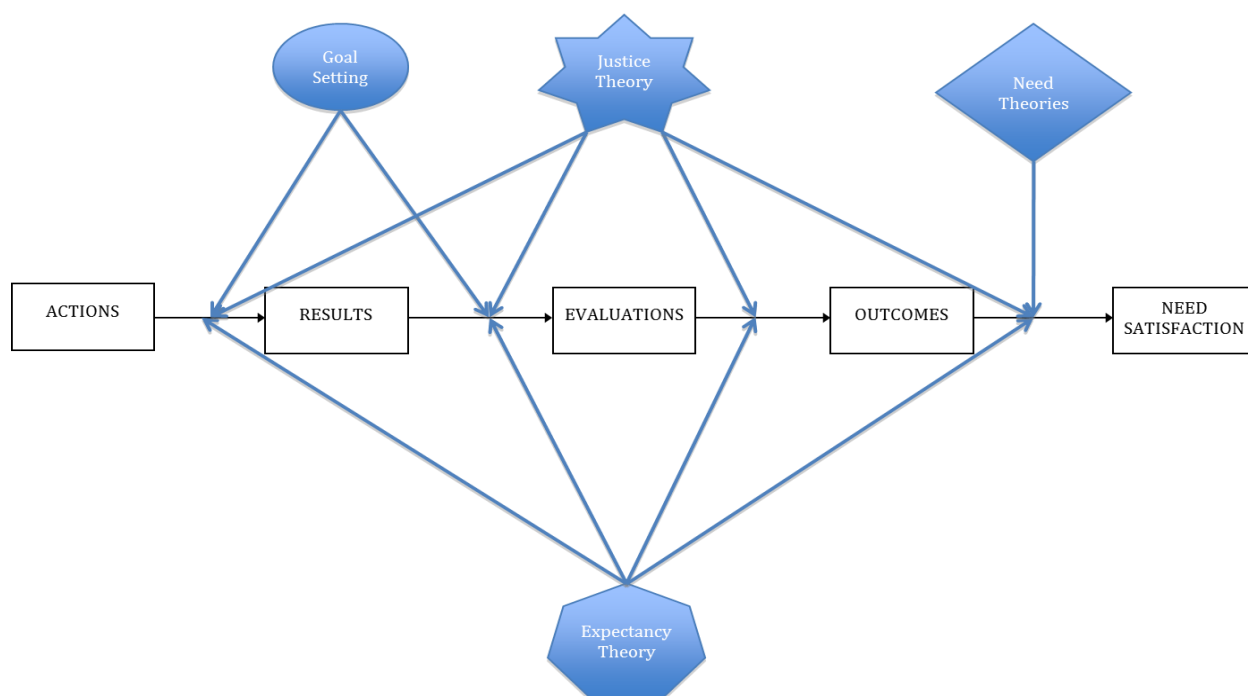


Figure 2: The Numerous Theories of Motivation and How They Are Accounted For With the Pritchard-Ashwood (2008) Theory of Motivation

Expectancy Theory and P-A Theory

Expectancy theory (Vroom, 1996) proposes that a person is motivated because they believe that his/her effort will result in performance (i.e., Actions to Results and Results to Evaluations connections of P-A Theory); that this performance will lead to an outcome (i.e., Evaluations to Outcomes connection of P-A Theory); and that this outcome will have a subjective value defined as the degree to which a person believes that the outcome will satisfy a need (i.e., Outcome to Need Satisfaction connection of P-A Theory). This relationship is displayed in Figure 2, which depicts P-A Theory as accounting for expectancy theory in each connection of the motivational process

Although expectancy theory and P-A Theory of Motivation are closely related (which would be expected with P-A Theory being built on the foundation of NPI theory), there are areas in which P-A Theory is differentiated from traditional models of expectancy theory. The

primary difference of P-A Theory is that instead of focusing on overall effort, it focuses on resource allocation. These differences in the theory allow for a dynamic and adaptive theory of motivation that theoretically and practically should be able to take into account different people and different situations in regards to motivation.

Goal Setting and P-A Theory

Goal setting (Locke & Latham, 2002) is the most examined and utilized theory of motivation currently in organizational sciences. Therefore, in order for P-A theory to be considered an integrated theory of motivation, it must satisfactorily incorporate the ideas of goal setting theory within itself. As discussed earlier, the research consistently concludes that difficult, specific, and achievable goals lead to higher levels of performance than “do your best” goals (Locke & Latham, 2002). The concept behind declaring specific goals can be seen through the P-A lens as clarifying the Results to Evaluations connection so that specific goals allow individuals to understand how different levels of results will be evaluated. If a result is at or above the expected level, the evaluation will be positive. Accordingly, if the result is below the expected level, the evaluation will be negative. The concept in goal setting of having achievable goals and therefore better performance is seen within P-A Theory and helps to make for a strong Actions to Results connection because employees will know what actions lead to what results. This relationship can be seen visually in Figure 2, which depicts P-A theory as incorporating goal setting theory within the actions to results and results to evaluations connections.

Need Theories and P-A Theory

Needs-based theories are constructed on the idea that our inherent needs serve as dispositions to action. When these actions are rewarded, the dispositions are thought to be

strengthened, resulting in stronger needs (Franken, 2007). P-A Theory incorporates the basic tenets of need theories within the Outcomes to Need Satisfaction connection. P-A Theory suggests that our needs motivate us based on how much we believe more amounts of outcomes will lead to more amounts of need satisfaction (Harrell, 2008). This relationship can be seen visually in Figure 2, which displays need theories within the outcomes to need satisfaction connection of P-A theory.

Justice Theory and P-A Theory

Justice theories (Adams, 1965; Folger & Cropanzano, 2001) of motivation explain that a person's motivation will be affected by feelings of equity at work that come from perceptions that rewards are fairly and justifiably distributed and that their voice is heard. P-A Theory accounts for the basic parts of this theory. For example, distributive justice is explained as how fair an employee views the rules dealing with the methodology of the distribution of outcomes in the workplace (Locke & Latham, 2007). In P-A Theory, distributive justice is accounted for within the Results to Evaluations connection and the Evaluations to Outcomes connection. Distributive justice is incorporated within the Results to Evaluations connection because the connection is stronger when it is clearly understood what level of results will lead to what level of evaluations and when this evaluation is the same for self, formal, and informal evaluations. Distributive justice is seen at the Evaluations to Outcomes connection because the connection is stronger when it is clearly understood what level of evaluation will lead to what level of outcomes and when this level of outcome is the same for self, formal, and informal evaluations. Procedural justice, or the idea that a person will perceive a situation as fair if they feel that they have control or input in the process (Colquitt et al., 2001), can be found within P-A Theory in the

Action to Results, Results to Evaluations, and Evaluations to Outcomes connections. If these connections are strong, workers will feel that they have control or input in work processes and therefore will be more motivated. Lastly, justice theories are also based on the idea that outcomes will be more satisfying if the employee perceives them as being fair. The concept of justice perceptions can also be found within P-A Theory in the Outcomes to Need Satisfaction connection because an outcome that is perceived as fair will be more likely to fulfill a person's needs, especially the need to feel as though the person is being treated fairly. This relationship can be seen visually in Figure 2, where justice theory is displayed as a part of each connection within P-A theory.

It was important for this dissertation to establish a strong theoretical connection between the many theories of motivation and P-A Theory because a main goal of this study is to examine a measure of P-A Theory of Motivation and it was critical to first create a strong theoretical basis for P-A Theory. (Figure 2 shows how all the specific motivation theories discussed are integrated into P-A Theory.) With this understanding and theoretical support, the measurement system that was created to test P-A Theory can be examined.

THE MOTIVATION ASSESSMENT SYSTEM

One of the strengths of P-A Theory of Motivation is that it allows for the creation of a testable measure of motivation. One such measure of motivation, the Motivation Assessment System (MAS; Pritchard, 2008), is based on the structure of P-A Theory and therefore allows for an initial test of the tenets of P-A Theory. The MAS was designed to be a measurement tool that could be used to evaluate employee motivation. The MAS has been developed with three components that allow one to test the motivational strength of workers in a progressively more descriptive manner. The first component is broad and is a global measure of a person's effort and direction with questions such as "How would you rate the amount of effort you put into your job?" or "I divide my time across tasks in a way that is most helpful to the organization". The second component, the connection component, measures the motivation process as described by Pritchard and Ashwood (2008) by assessing the Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction connections. Pritchard and Ashwood (2008) explain that these connections are the specific components that make up the global effort and direction constructs that are traditionally used to describe motivation. The third component is made up of determinants for each of the connections in the second component (i.e., the antecedents of the connections). These determinants are designed as probing questions to ask subjects in an applied setting to better understand why they might score high or low on a connection. The goal of this design was one that would allow the different self-report assessment tools to be used separately or together so that it could fit an organization's or researcher's needs. This configuration also allowed for the MAS to be adaptable in a research

setting as well as in a practical organizational setting. Below, I describe the three components of the MAS and the development of the MAS in detail.

The Three Components of MAS Assessment

First Component of MAS Assessment

The first component of assessment within the MAS examines motivation using the broad concepts of effort and direction. (The entire MAS can be found in Appendix.) Effort describes how much energy one is putting into his/her job. An example item would be: “I consistently put forth the maximum effort possible at work.” Direction determines how well the effort is used in terms of actions that are the best for the organization. An example item would be: “My supervisor and I agree on the way my tasks should be prioritized.”

Second Component of MAS Assessment

The second component of analysis within the MAS measures motivation as the strength of the four connections within the motivation process. This component mirrors the theoretical model set forth in P-A Theory (Pritchard, 2011). Therefore, testing this component of the scale is the primary and most important test that must be carried out to evaluate the strength of the proposed theory and measure of that theory. As explained above, these connections are the Actions to Results connection, Results to Evaluations connection, Evaluations to Outcomes connection, and Outcomes to Need Satisfaction connection. Each of these connections has its own scale designed to measure the strengths of these connections based on their definitions from within P-A Theory of Motivation. In regards to the Results to Evaluations connections and Evaluations to Outcomes connections, there were three scales developed: a self-evaluation scale, an informal evaluation scale, and a formal evaluation scale. All three scales can be utilized and

combined into one score or just one or two scales can be evaluated depending on the requirements of the study being conducted. This component is designed to capture the extent to which employees will use resources and what they will direct those resources towards.

According to P-A Theory, if one of these connections is weak, then it will result in the overall motivation of the employee being low.

Third Component of MAS Assessment

The last component of the MAS captures the “determinants” (i.e., the antecedents) of the connections in the second component. The determinants are the individual variables that influence the strength of each of the connections within the motivation process, including Ability (e.g., “I do not have some of the key abilities to do my job”), Work Strategy (e.g., “I have a good strategy for doing my work”), Relative Importance (e.g., “It is not clear to me which parts of this job are the most important”), Clarity of Evaluation (e.g., “I get clear information on how well I am doing my job”), and Outcome Clarity (e.g., “It is not clear what all the job outcomes are on this job”). Figure 3 shows the entire P-A Theory of Motivation, including the determinants and where they are placed in the motivational chain. Each connection has its own set of determinants that specifically deal with the strength of that connection. For example, the Outcomes to Need Satisfaction connection has the determinants of Outcome Frequency (e.g., “The job outcomes do not come often enough for me to be satisfied”), Outcome Attractiveness (e.g., “I like the type of job outcomes my company can provide”), Outcomes Meet Expectations (e.g., “The overall level of outcomes I get on this job meets my expectations”), and Fair Compared to Others (e.g., “Compared to what other people here get, the job outcomes I get are fair”). If a specific determinant is extremely important to the strength of the connection, then making sure that

determinant is fulfilled becomes more important. This component is most beneficial in applied settings rather than research settings as the determinants are designed to give organizations feedback on what they should focus on to improve employee motivation. Therefore, the determinants were not designed to be a complete list of what causes the strength of each connection, but rather a group of practical issues within organizations that can be measured, observed, and changed if needed (e.g., “I have the training to do my job”, “All the important parts of my work are measured”, “The way job outcomes are given here seems fair”, and “I like the job outcomes my company can provide”). By assessing the strengths of these determinants, a practitioner is provided with the ability to develop specific and targeted interventions to improve the motivation of the organizational members. Because the determinants are designed to give a practitioner an idea of what needs to be focused on within the organization, it was created with a single-item scale approach, meaning that the items are not expected to correlate with each other. Accordingly, follow up questions are meant to be asked of employees about any determinants with low ratings so as to gain a better understanding of why these items were rated low. Because the determinant component in its current state is meant to serve as the basis for a structured, open-ended discussion of an organization’s determinants, it is not suitable for psychometric evaluation (i.e., it is essentially multiple, single-item scales meant to be followed with open-ended items, rather than a traditional, multiple-item scale).

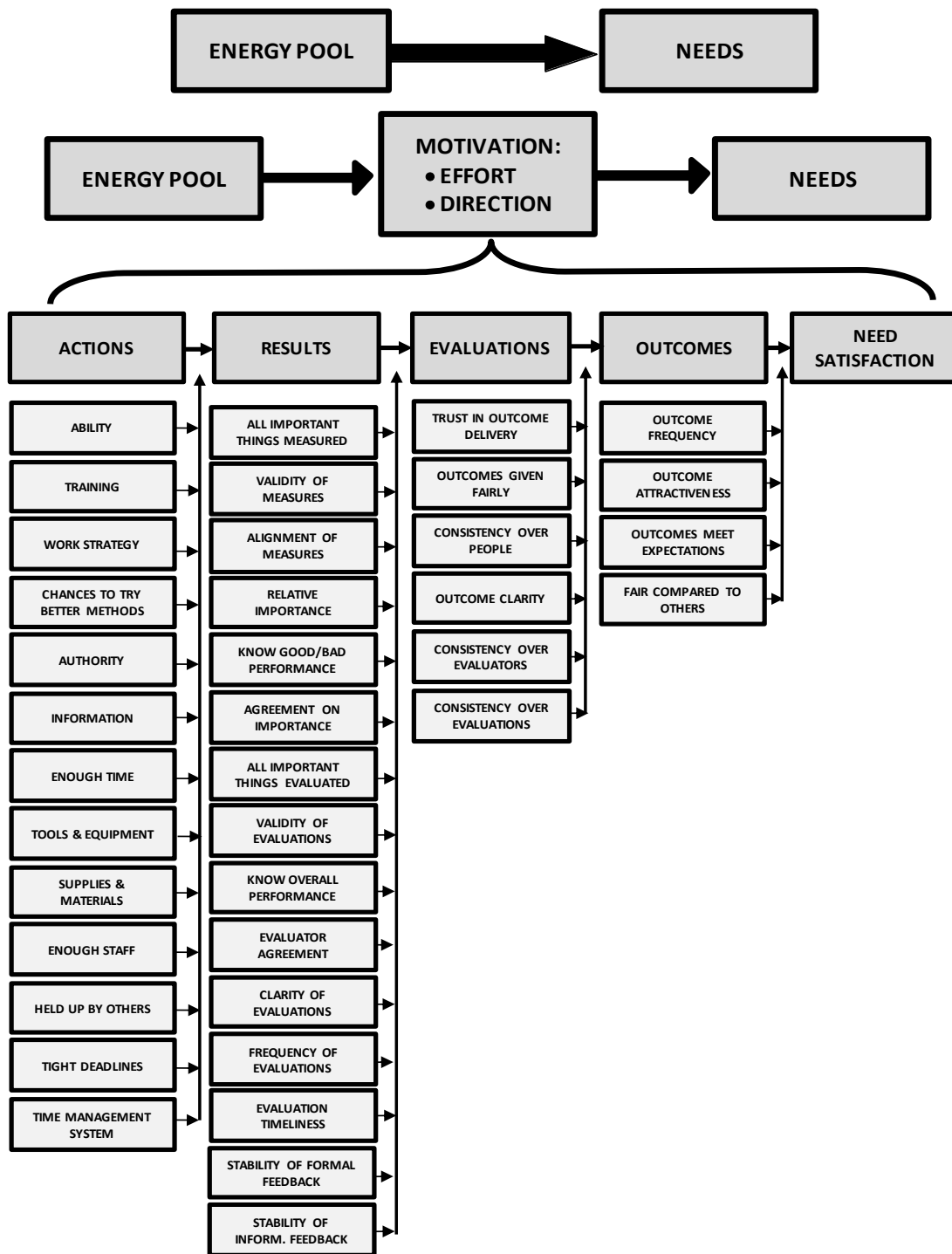


Figure 3: The Pritchard-Ashwood (2008) Theory of Motivation with Determinants²

² From “Motivation Assessment System Description,” by R. D. Pritchard, 2011, p. 2. Unpublished Manuscript. Adapted with permission of the author.

This dissertation focuses on the second component of the MAS, the connection component. The focus is on the second component because this is the theoretical base of P-A Theory of Motivation and because the purpose of this dissertation is to examine the tenets of P-A Theory by examining the properties of the MAS, it makes sense to focus on this section of the measure. Furthermore, as will be discussed later in this dissertation, the second section of the measure is the strongest psychometric aspect of the measure. Therefore, because the heart of the theory and the psychometric strength of the theory are in the second component, that is where this dissertation focused its efforts. Next, I will examine how this section of the MAS was developed so that I can provide support for the assertion that this section is built on a strong foundation.

MAS Development

The development of the MAS started in 2000 and was conducted by Robert Pritchard (Cornejo, 2007). The development of the MAS was broken down into three sections based on the principles laid out in P-A Theory. First, the definition of the concepts being tested were developed. Second, the specific items that would be used to measure each concept were written. Lastly, the analysis of the relationship between each of the items was conducted. Item pools were developed for each of the four connections within the theory (i.e., Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction). The items were designed as five-point Likert response items using both positive and negatively worded items for reverse coding to increase methodological heterogeneity (Nunnally & Bernstein, 1994).

Pilot tests were then conducted to assess the clarity of the wording of the items and to uncover any semantic problems that the development team might face going forward (Cornejo, 2007). The researchers found that some of the words used in motivation theory did not translate over correctly to the questionnaire. Specifically, the terms *effort* and *productivity* were used to replace the terms *actions* and *results*. The items were then given to a set of undergraduate psychology and management students who worked at least 10 hours per week and had been employed at their current organization for at least 3 months. The items were tested to determine which items should be retained. For an item to be retained, it needed to have an internal consistency estimate of .85 or greater when the item was present, the items retained needed to have varying sentence structure, they needed variance greater than .80, they needed a low readability level, and the items needed to have a low amount of skew (Cornejo, 2007). The end result was 10-11 items satisfying all these requirements for each connection measure.

Next, the researchers wanted to reduce the number of items for each connection measure to 5 items for ease of use. Almost all of the 10-11 items for each connection measure had high coefficient alphas and high variability. Therefore, the retained items were chosen based on their clarity, readability, having different response formats (*Get Worse – Get Much Better*, *Decrease – Greatly Increase*, etc.), and having at least one reverse coded question for each connection measure (Cornejo, 2007). Again, reliability analyses were conducted on the new sets of items with the lowest coefficient alpha being .82. A new sample was utilized for the next stage of pilot testing. This sample was composed of 310 undergraduate students. Internal consistency reliability estimates were calculated and varied from .76 to .89 for the four connection measures (Cornejo, 2007). According to Nunnally and Bernstein (1999) the internal consistency reliability estimate for each subscale should be at least .80. Therefore, the connection measure scale that

was estimated at .76, the *self results-evaluation* subscale, had a sixth item added to improve its reliability.

Finally, a test-retest reliability study was conducted. The subject sample for this test was made up of 105 undergraduate students. The test was provided to the subjects and then it was provided again two weeks later while also including items that would be able to account for any “true change” in motivation that might have occurred between the test administrations (e.g., promotion, organizational restructuring, divorce, etc.; Cornejo, 2007). The test-retest reliability estimates ranged from .55-.79, well within the requirements set forth by Nunnally and Bernstein (1994).

METHODOLOGY

This dissertation tested the measurement properties of the MAS by first examining scale reliability. The second stage of analysis involved analyzing multiple competing models using confirmatory factor analysis to test the fit of the measurement structure and determine if the proposed structure would have the most parsimonious fit compared to competing models.

Sample

Participants were gathered from a number of sources including 313 participants from undergraduate psychology students, 39 MBA students, and 15 Master's students from a large southeastern university between 2007 and 2009. The sample also included 98 subjects from a southeastern branch of a large telecommunication organization as well as 28 southeastern police officers between 2006 and 2007. Finally, 287 paid subjects from across the United States were gathered through Survey Monkey Audience (an online service that provides subjects for a nominal fee) in 2008.

To be included as a participant, one must have worked at least 30 hours per week, worked for one year or more in the current job, and responded to every question in the MAS, resulting in a total *N* of 317 subjects.

Measures

The component of the MAS that was tested for this dissertation was the second component. This component was designed to test the four connections between the motivation variables that are described in P-A Theory. These connections are the Actions to Results (e.g., "When I put more effort into this job, the quantity and quality of my work go up"), Results to Evaluations (e.g., "The higher the quantity and quality of my work, the more highly I evaluate

my work”), Evaluations to Outcomes (e.g., “The better the formal evaluations of my work are, the better the job outcomes I will get”), and Outcomes to Need Satisfaction (e.g., “The job outcomes I can get on this job are valuable to me”; the entire MAS can be seen in the Appendix). The Actions to Results connection is meant to measure the perception of whether there is a strong relationship between how much effort a person puts into their job and the amount of and quality of the results that they are able to produce and consists of four items. The Results to Evaluations connection is meant to measure the perception of the strength of the relationship between the amount and quality of a person’s results and the level of evaluations that they get from themselves, others informally, and from formal job appraisals. The Results to Evaluations measure consists of eleven items. The Evaluations to Outcomes connection is meant to measure the perception of the strength of the relationship between the level of evaluations a person receives and the amount of outcomes that result from those evaluations. The Evaluations to Outcomes measure consists of ten items. The Outcomes to Need Satisfaction connection is meant to measure the perception of the strength of the relationship between the amount of outcomes a person receives on the job and how much they expect that these outcomes will satisfy their needs. The Outcomes to Need Satisfaction measure consists of three items. The connection component of the MAS was chosen as the component to examine because it is the only component of the MAS that was designed to have traditional scale properties that are suitable for reliability and factor structure analysis.

Analyses

The MAS structure was tested using confirmatory factor analysis (CFA) by comparing the fit of five models to the data. Each model represents a different approach to explaining the

data. The model based on P-A theory will be labeled the proposed model and other possible explanations for how the data can be explained are designated as competing models. Support for the MAS as a whole would be demonstrated by better fit of the proposed model in comparison to the competing models. A series of five different models including the proposed model were tested with CFA using LISREL 8.8 (Jöreskog & Sörbom, 1996). As described below, the proposed model (Model 1) was labeled the “Second-Order Model.” The competing models that were examined were labeled the “Four-Factor Model (Model 2)”, the “Bifactor Model (Model 3)”, the “Single-Factor Model (Model 4)”, and the “Single-Factor Bifactor Model (model 5)”.

The proposed “Second-Order Model” involved the Actions to Results and Outcomes to Need Satisfaction items loading directly onto their respective latent factors (i.e., four items loading onto the Actions to Results latent factor and three items loading onto the Outcomes to Need Satisfaction latent factor). Because the Results to Evaluations and Evaluations to Outcomes items were divided into sets of Self, Formal, and Informal items (i.e., R-ESelf, R-EFormal, R-EInformal, E-Oself, E-OFormal, and E-OInformal), this resulted in three latent factors (R-ESelf, R-EFormal, and R-EInformal) that loaded onto a higher-order Results to Evaluations latent factor, and three latent factors (E-Oself, E-OFormal, and E-OInformal) that loaded onto a higher-order Evaluations to Outcomes latent factor. The latent connection variables (Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction) were allowed to correlate with each other because it is expected that a deficiency in one connection would likely be related to a deficiency in another connection. An example of this would be between the Actions to Results connection and the Outcomes to Need Satisfaction connection. If a worker has a low Actions to Results connection because he does not have the training to successfully perform his job, it would be expected that this person would

answer questions lower in the Outcomes to Need Satisfaction connection because he would likely not be getting outcomes that are important to him on the job due to his lack of performance. A graphical depiction of this can be seen in Figure 4.

The first proposed competing model was the “Four-Factor Model”. This model was similar to the first model, except it did not include the six Self, Formal, and Informal factors. Instead, all of the Results to Evaluations items loaded directly onto the Results to Evaluations factor, and all of the Evaluations to Outcomes items loaded directly onto the Evaluations to Outcomes factor. Comparing the fit of this model to the proposed model provides a test for the discriminant validity of the Self, Formal, and Informal latent variables (i.e., are the Self, Formal, and Informal evaluations actually assessing separate constructs that each reflect a higher-order latent construct?). A graphical depiction of this can be seen in Figure 5.

The second proposed competing model was the “Bifactor Model”. This model was a combination of the original proposed “Second-Order Model” and the first competing “Four-Factor Model”. In this model, the Results to Evaluations and Evaluations to Outcomes items double-load onto both the Results to Evaluations and Evaluations to Outcomes factors respectively, as well as latent Self, Formal, and Informal factors. This bifactor structure accounts for the shared variance among the items that are designed to capture evaluations from the same source (e.g., the R-ESelf items and the E-OSelf items capture similar “method” variance because they both involve Self evaluations). Examining the strength of the loadings of the Results to Evaluations and Evaluations to Outcomes items onto the latent Results to Evaluations/Evaluations to Outcomes factors vs. the “method” factors (i.e., Self, Formal, and Informal factors) will allow for conclusions regarding the extent to which these items are capturing the intended construct vs. “method” variance. In this model, the Self, Formal, and

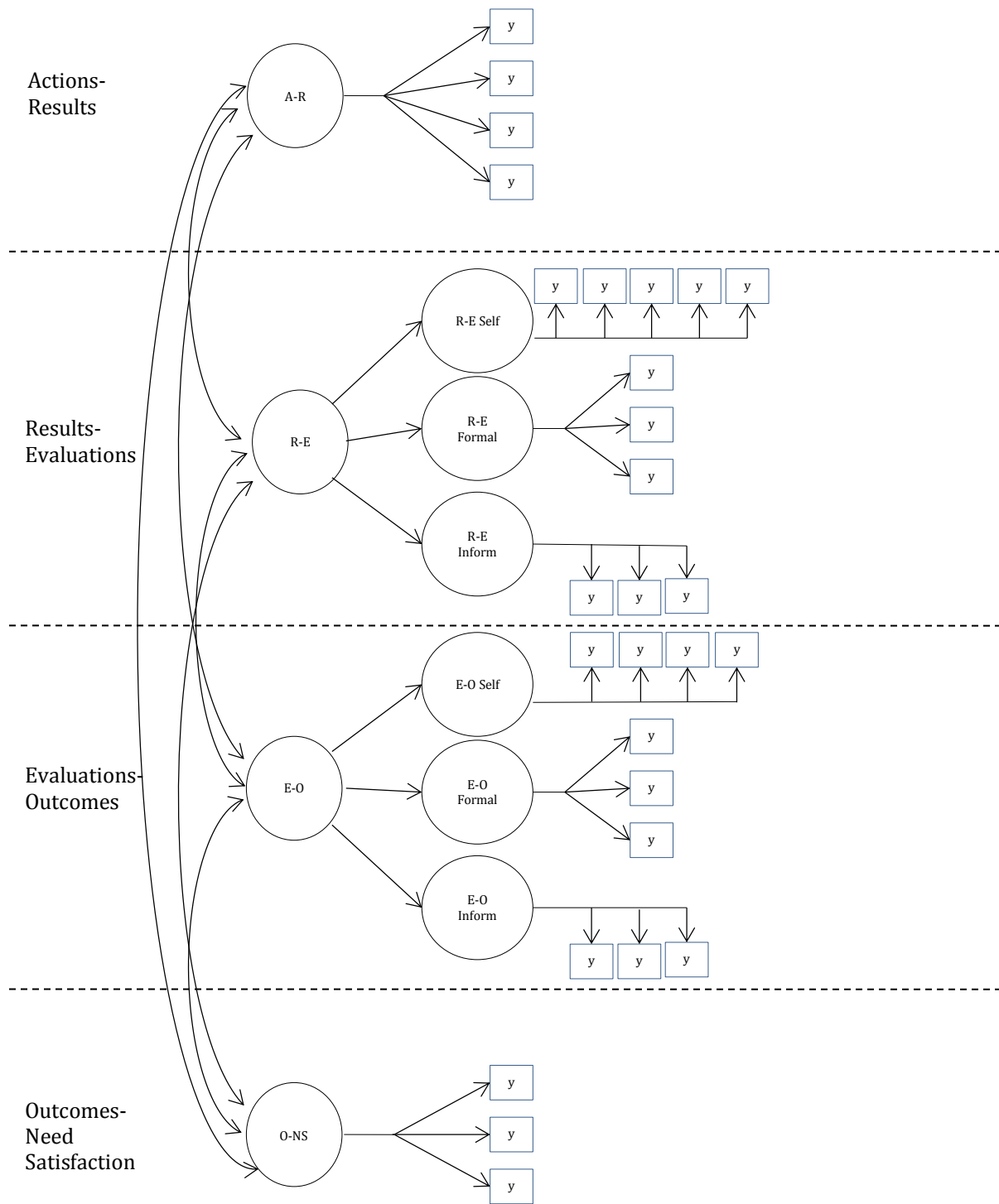


Figure 4: The Proposed Second-Order Model (Model 1)

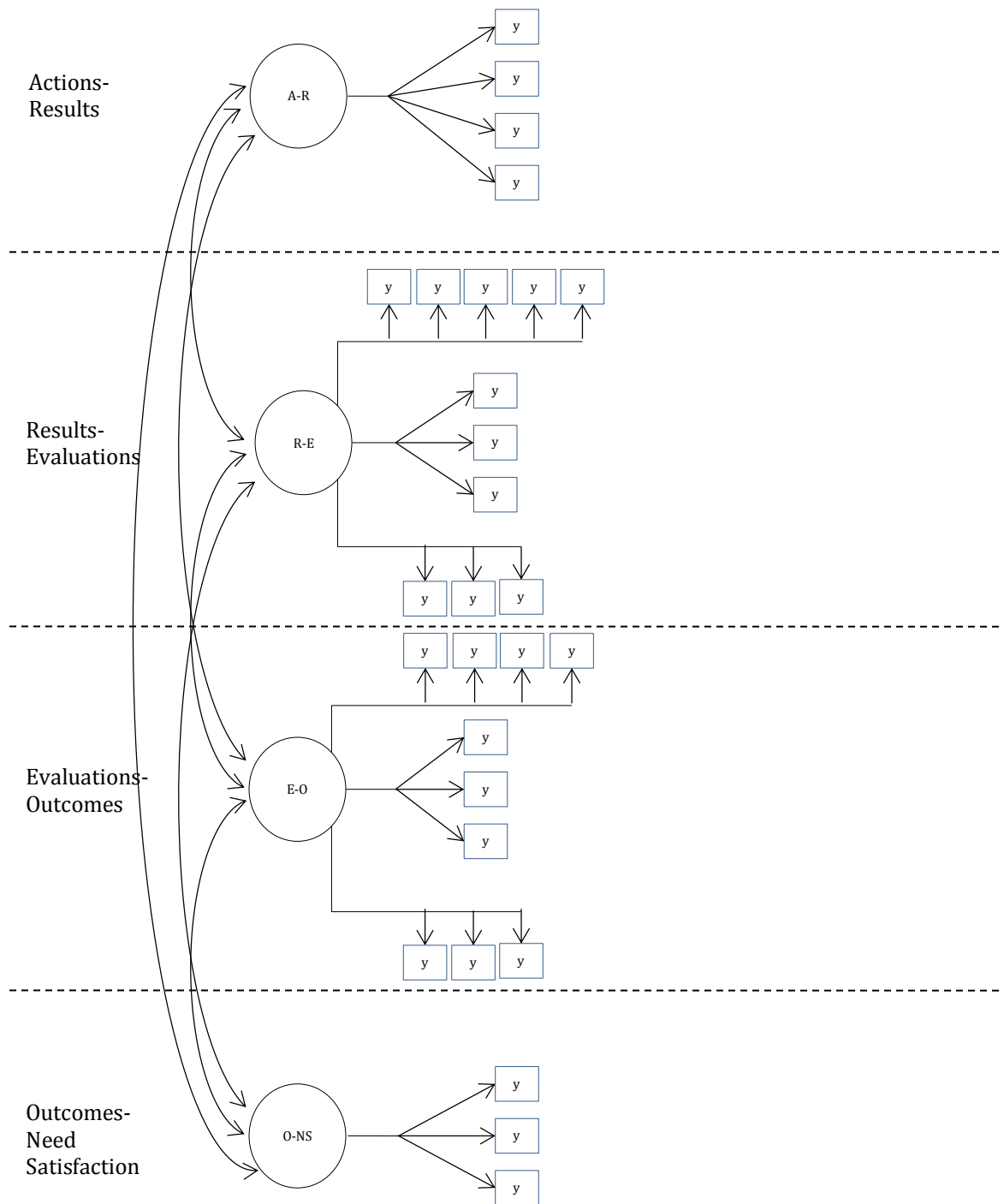


Figure 5: The Proposed Four-Factor Model (Model 2)

Informal factors were also allowed to correlate with each other. A graphical depiction of this can be seen in Figure 6.

The third proposed competing model was the “Single-Factor Model”. This model had only one latent construct labeled the “Motivation” factor. Every item from the scale loaded onto this one and only factor as a test of the discriminant validity of the latent Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction factors (i.e., if evidence supports this model over the four-factor model, the MAS is not capturing four distinct latent motivational processes, as intended, but rather, a single motivational construct). A graphical depiction of this can be seen in Figure 7.

In a similar test of discriminant validity, the final proposed competing model was the “Single-Factor Bifactor Model”. This model was a combination of the “Bifactor Model” and the “Single-Factor Model”. Every item in the scale loaded directly onto an overall “Motivation” factor. However, all of the Results to Evaluations and Evaluations to Outcomes items also double-loaded onto their respective Self, Formal, or Informal latent factors. These three latent factors (i.e., Self, Formal, and Informal) were allowed to correlate. This model was designed to (again) test the discriminant validity of the four Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction factors (i.e., if this model exhibits better fit than the bifactor model, there is evidence for the discriminant validity of the Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction factors). Similarly, when compared to the single-factor model, this model can also suggest whether the Self, Formal, and Informal factors explain a substantial portion of “method” variance in the Results to Evaluations and Evaluations to Outcomes Self, Formal, and Informal items. A graphical depiction of this can be seen in Figure 8.

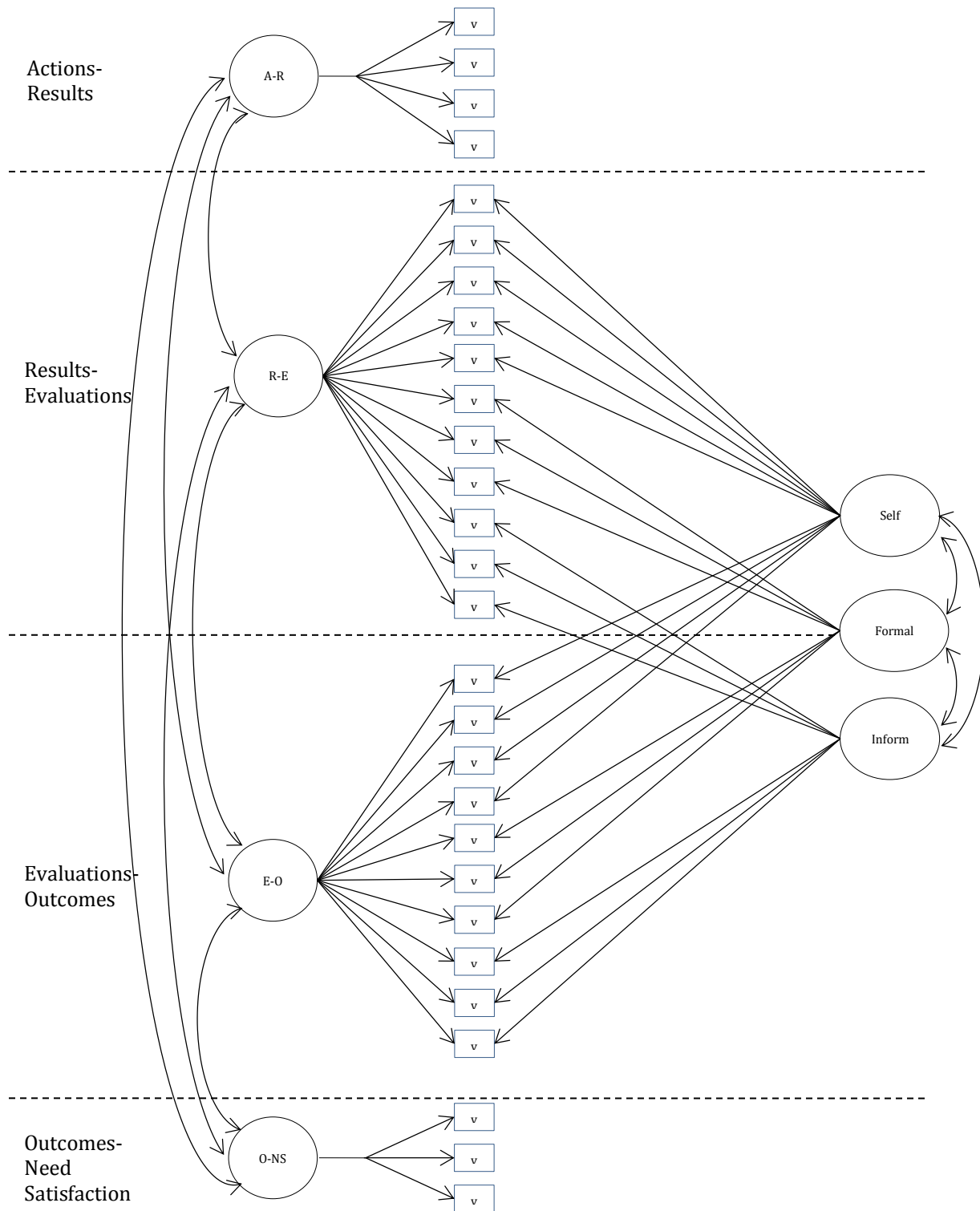


Figure 6: The Proposed Bifactor Model (Model 3)

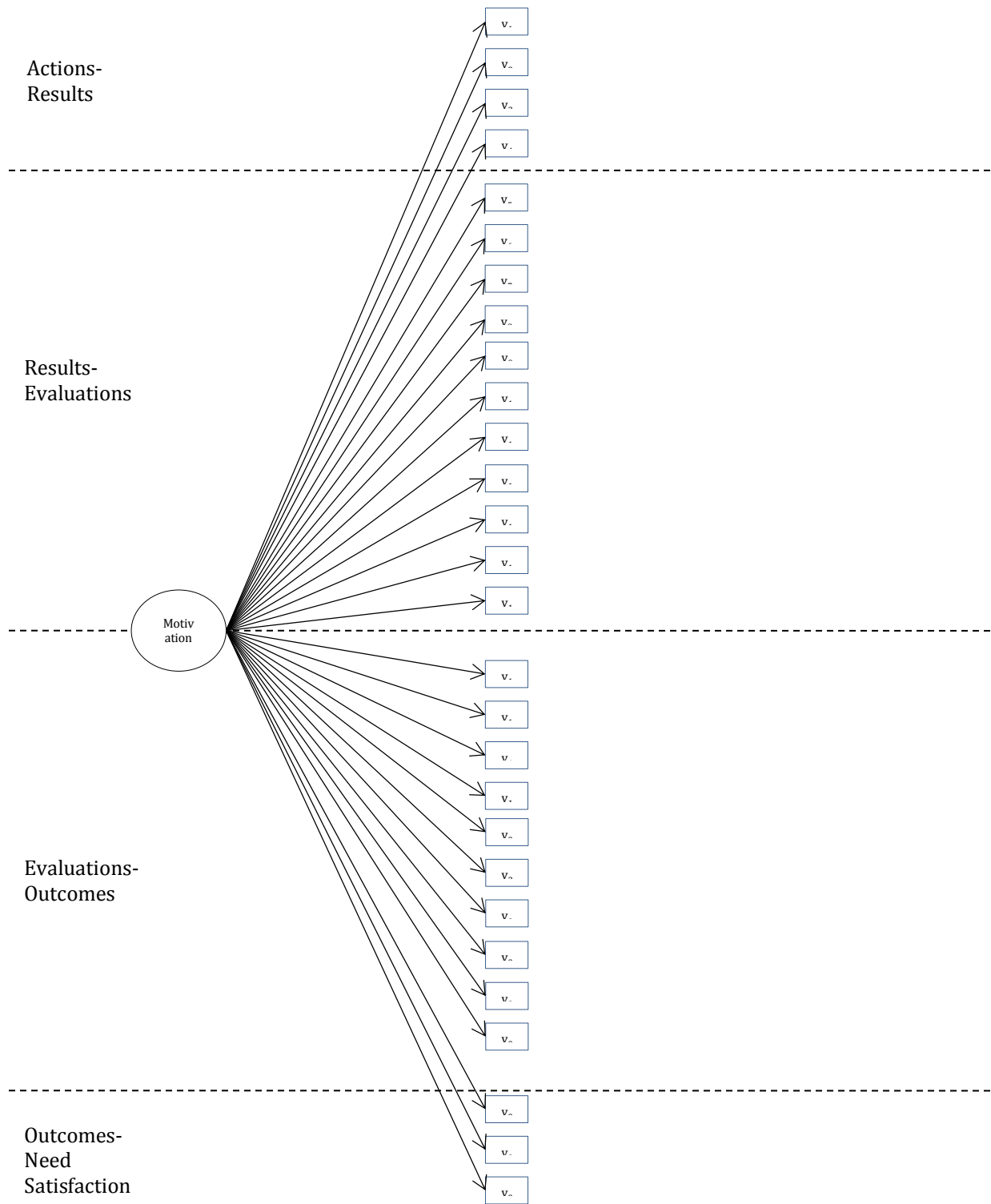


Figure 7: The Proposed Single-Factor Model (Model 4)

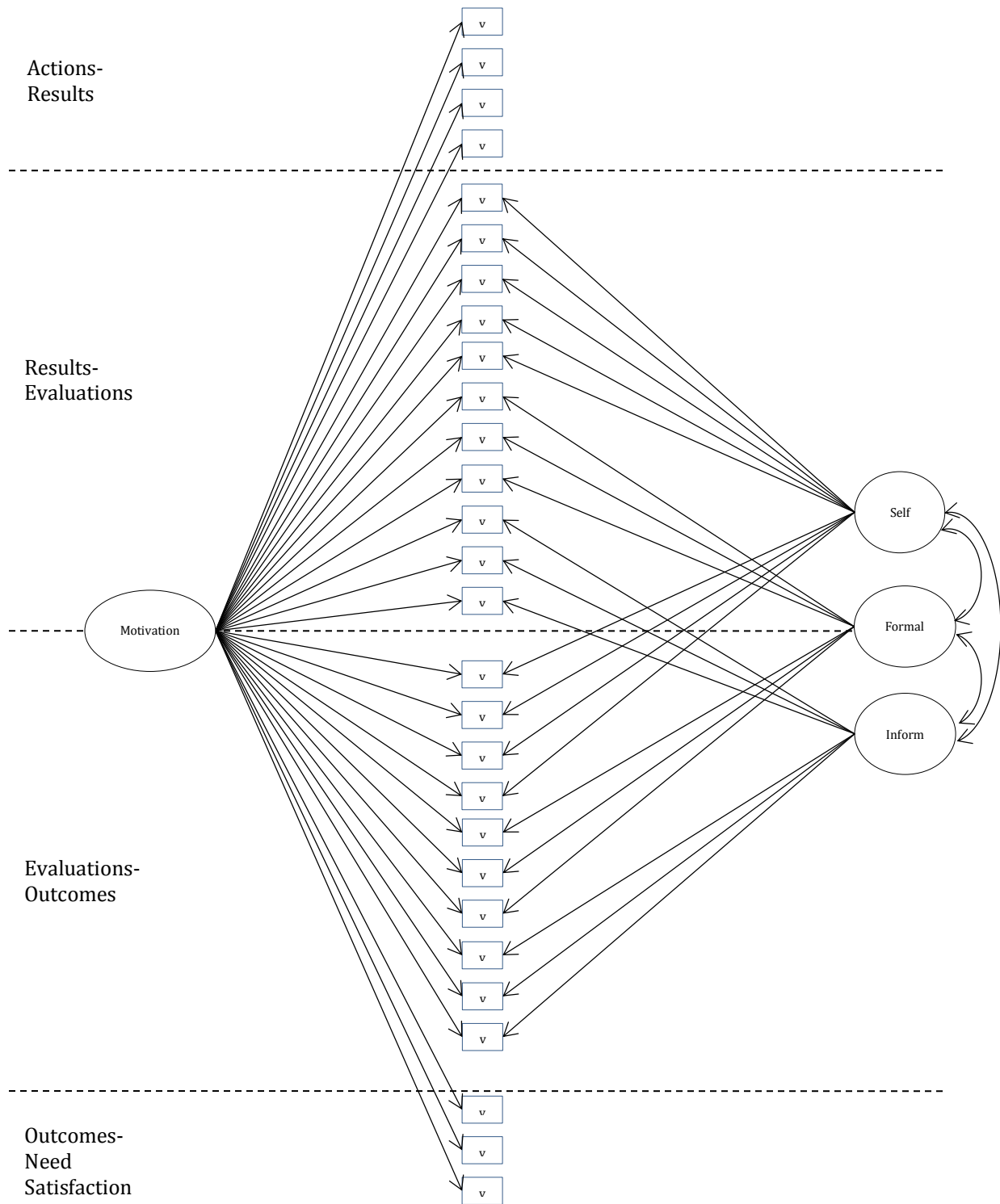


Figure 8: The Proposed Single-Factor Bifactor Model (Model 5)

Non-Nested Models and Fit Indices

When using confirmatory factor analysis to examine a proposed theoretical model, one traditionally does so by comparing a proposed model to other possible models that could be used to explain the data. As noted above, the current study examines a proposed model that is based on P-A theory and compares the fit of this proposed model to that of multiple competing models. When determining how to compare these models, one must first determine if the models are nested or not. If the models are nested, the researcher is able to use null-hypothesis chi-square difference tests to compare the proposed model to each competing model (Cheung, 2009). When using chi-square difference testing, the null hypothesis would be that the proposed model is correct and the alternate hypothesis would be that one of the competing models is correct. In this instance, support for the proposed model would come from not being able to reject the null-hypothesis (Cheung, 2009). Researchers generally enjoy using this method for testing comparable confirmatory factor analytic models because it allows for them to use the well-known concept of null-hypothesis testing. However, there are inherent limitations to using chi-square difference tests in large sample sizes, wherein the chi-square difference test can incorrectly signal that small differences in model fit are significant (Jöreskog & Sörbom, 1996). Therefore, in the current study, I report the chi-square difference test, but I rely on other fit indices (described below) when comparing nested models.

For one model to be nested in another, they must meet simple criteria. Model A would be considered nested in Model B if the only differences were added relationships to Model A or if some of the parameters in Model A are fixed and/or constrained in Model B. If there are other differences (such as Model B being obtained by deleting some parameters from Model A and

adding others), then the models are non-nested and the chi-square difference test cannot be used for comparing the models using null-hypothesis testing (Cheung, 2009). In this dissertation, only some of the models being compared are nested (e.g., the single-factor model [Figure 7] and the single-factor bifactor model [Figure 8] are nested, but the single-factor model [Figure 7] and the proposed second-order model [Figure 4] are not). Therefore, the use of the chi-square difference test to compare the models would only be appropriate in some model comparisons. Moreover, given the sample-size dependency of chi-square difference tests (Jöreskog & Sörbom, 1996; Kline, 2005), I do not rely on chi-square difference tests in the current paper to compare various models. Instead, the current paper reports three goodness of fit indices; the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and Akaike's Information Criterion (AIC). The CFI "measures the proportionate reduction in the chi-square values when moving from the baseline to hypothesized models" (Cheung, 2009, p 54). In this situation, the "hypothesized model" is the model being tested and the "baseline model" is the independence model (the model that states all variables are uncorrelated). When using CFI, the model is considered to have good fit if $CFI > 0.90$ (Lance, Butts, & Michels, 2006). When comparing nested models, the progressive change in CFI (ΔCFI) can be examined, wherein a ΔCFI larger than .01 between models is indicative of a significant difference in fit (Cheung & Rensvold, 2002). The RMSEA measures the average value across the standardized residuals. The residual would be defined as the difference between the implied covariance matrix of the model and the sample covariance matrix (Cheung, 2009). Ideally, this difference would be small, indicating that the covariance matrix that the model produces is similar to the matrix that the sample actually produces. This would show that the model is accurately portraying the sample being measured. Browne and Cudeck (1992) explain that a model has acceptable fit if

the value of the RMSEA is < 0.08 . When comparing two nested models, one may compare the overlap in 90% confidence intervals of RMSEA (Cadiz, Sawyer, & Griffith, 2009; Wang & Russell, 2005; see also Cheung & Rensvold, 2002) in addition to ΔCFI to assess comparative fit across models (i.e., if the confidence intervals overlap, evidence suggests the models fit equally well). Lastly, when comparing non-nested models, one may interpret AIC across models. AIC is beneficial because it is used to measure how much information is lost from the “true model” that represents the data compared to the model being tested. Therefore, the model with the lowest AIC value, or the better fit, is going to be the model which has lost the least amount of information from the actual model (i.e., the model with the lowest AIC is the best fitting model; Cheung, 2009).

RESULTS

The analysis was conducted in a series of steps. First, a reliability analysis was conducted to confirm the quality of the items within each subscale of the measure and to make sure that they correlated well with each other. Next, confirmatory factor analysis was used to evaluate the fit of the proposed Second-Order Model and the four competing models (i.e., the Four-Factor Model, Bifactor Model, Single-Factor Model, and the Single-Factor Bifactor Model). The descriptive statistics and intercorrelations among the four connection scales can be found in Table 1

Reliability Analysis

Results of the reliability analysis are presented in Table 2. The four dimensions of the MAS (Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction) ranged in Cronbach's alphas between .72 to .90. Further, the Results to Evaluations and Evaluations to Outcomes dimensions were analyzed for the Self, Formal, and Informal subscales within each dimension. These Cronbach's alphas ranged from .78 to .89. The overall internal consistency for the entire scale was .93. These results suggest substantial inter-item overlap and the results meet traditional standards for internal consistency (Nunnally & Bernstein, 1994).

Confirmatory Factor Analysis

The results for the CFA used to evaluate the fit of the five models can be found in Table 3. The table shows that the model with the best fit was the Second-Order Model and the model with the worst fit was the Single-Factor Model. Following the table is a more in-depth analysis of the results from each individual CFA that was conducted.

Table 1:
Descriptive Statistics and Intercorrelations

Scale	# of Items	Mean	SD	1	2	3	4
1. Actions – Results	4	4.13	.782	1.00			
2. Results – Evaluations	11	3.68	.922	.255**	1.00		
3. Evaluations – Outcomes	10	3.49	.913	.217**	.358**	1.00	
4. Outcomes – Need Satisfaction	3	3.84	.933	.263**	.254**	.237**	1.00

Note. $N = 317$, ** $p < .01$.

Table 2:
Reliability Analysis

Scale	Cronbach's Alpha
1. Actions – Results	.72
2. Results – Evaluations	.89
a. Self Results – Evaluations	.78
b. Formal Results – Evaluations	.84
c. Informal Results – Evaluations	.82
3. Evaluations – Outcomes	.90
a. Self Evaluations – Outcomes	.78
b. Formal Evaluations – Outcomes	.87
c. Informal Evaluations – Outcomes	.89
4. Outcomes – Need Satisfaction	.84
5. Total Scale	.93

Table 3:
Fit Indices for Confirmatory Factor Analysis

Model Number and type	χ^2	df	$\Delta\chi^2$	CFI	RMSEA	RMSEA 90% CI	AIC
1. Second-Order Model	724.87	335	-----	.91	.06	.056-.068	878.74
2. Four-Factor Model	1343.39	344	618.52**	.78	.10	.091-.101	1467.39
3. Bifactor Model	818.55	320	93.68**	.96	.07	.064-.076	990.55
4. Single-Factor Model	2688.46	350	1963.59**	.86	.14	.14-.15	2800.46
5. Single-Factor Bifactor Model	1475.98	326	751.11**	.92	.11	.10-.11	1635.98

Note. $N = 317$ for all chi-square analyses. All chi-square analyses were done in comparison to the Second-Order Model. ** = $\Delta\chi^2$ $p < .001$. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; RMSEA 90% CI = root-mean-square error of approximation 90% confidence interval upper and lower bounds; AIC = Akaike Information Criterion.

Proposed Second-Order Model

The Second-Order Model was the proposed model implied by the original authors of the Pritchard-Ashwood Theory of Motivation (Pritchard & Ashwood, 2008). The results of this model reflected adequate fit of the model (i.e., CFI = .913 and RMSEA = .062). All loadings and latent correlations were significant, and none of the standardized loadings were above 1.00. The latent correlations among the four dimensions of the MAS range from .40 to .76, which appears to support the inclusion of these four dimensions as separate, but related factors (i.e., the latent correlations are not so high as to suggest these factors would be better represented by a single factor). The model with the standardized loadings is presented in Figure 9.

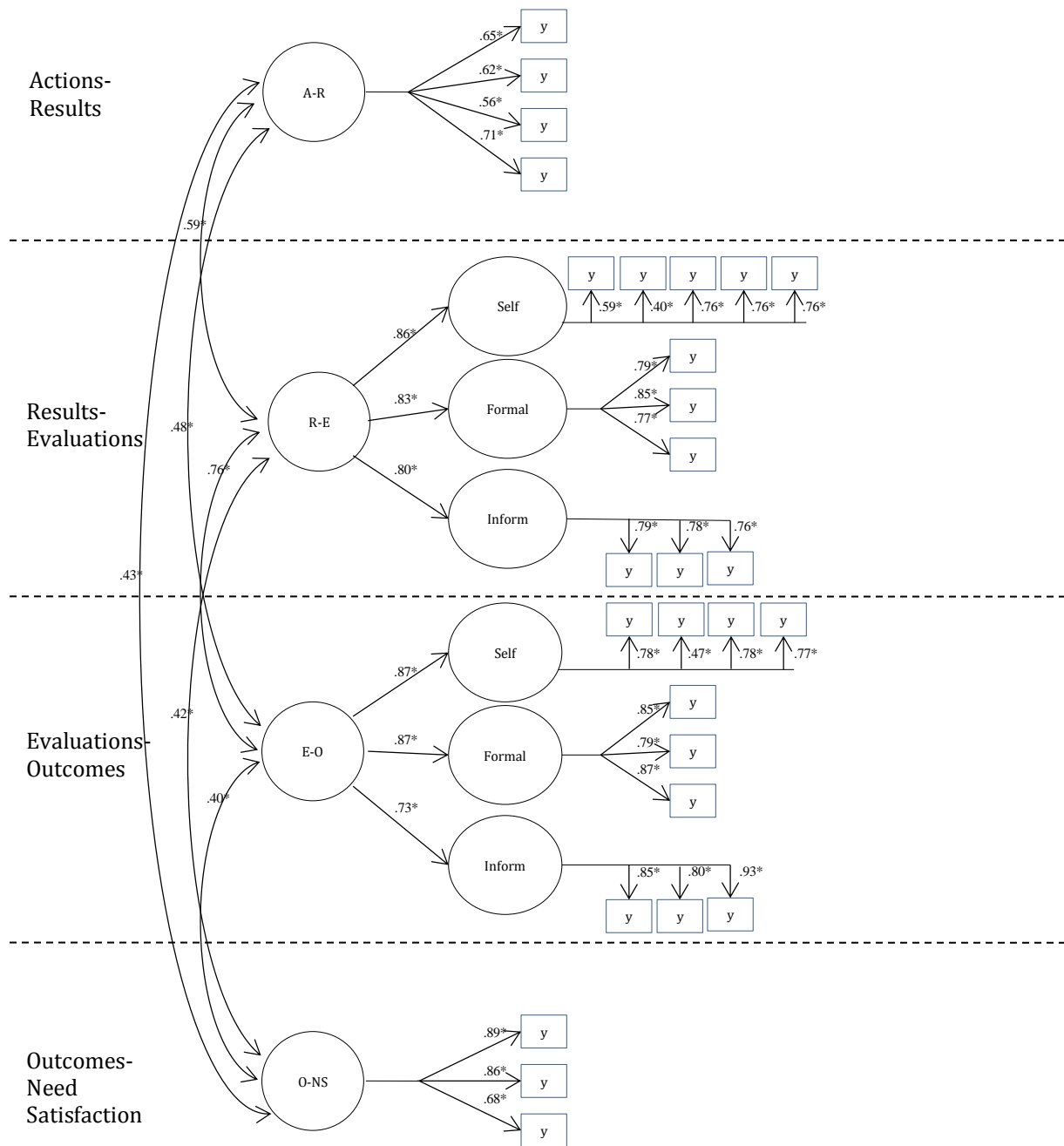


Figure 9: The Standardized Solution for the Second-Order Model (Model 1). $\chi^2 = 724.87$, $df = 335$. CFI = .91, RMSEA = .06, and AIC = 878.74. * $p < .05$. ** $p < .01$

Four-Factor Model

The Four-Factor Model is the first competing model. In this model, the Self, Formal, and Informal latent factors were removed from the model and all the items loading onto these factors represented a single Results to Evaluations or Evaluations to Outcomes latent factor. Results indicate poor fit of the model (i.e., CFI = .785, RMSEA = .096, and AIC = 1467.39), and when compared to the proposed model, this model exhibits worse fit (i.e., $\Delta\chi^2 = 618.52$, $p < .001$; $\Delta\text{CFI} > .01$, RMSEA confidence intervals are non-overlapping) which offers initial support for the discriminant validity of the Self, Formal, and Informal latent factors. All loadings and latent correlations were significant and none of the standardized loadings were over 1.00. The results of this model are displayed in Figure 10.

Bifactor Model

The Bifactor Model involved a single latent factor for each of the Self, Formal, and Informal latent variables. Each Self, Formal, and Informal item double-loaded onto its respective Self, Formal, or Informal latent variable and the Results to Evaluations or Evaluations to Outcomes factor. The CFI = .96 (compared to .92 in the proposed Second-Order Model), the RMSEA = .07 (compared to .06 in the proposed Second-Order Model), and the AIC = 990.55 (compared to 878.74 in the proposed Second-Order Model). All of the loadings for the Self, Formal, and Informal latent factors were significant except for one indicator of the Informal latent factor, and the latent correlations between Self, Formal, and Informal latent factors were all significant, with the exception of the Self and Informal and Formal and Informal correlations. None of the standardized loadings were over 1.00. The adequate fit of this model suggests the Results to Evaluations and Evaluations to Outcomes items do reflect some variance

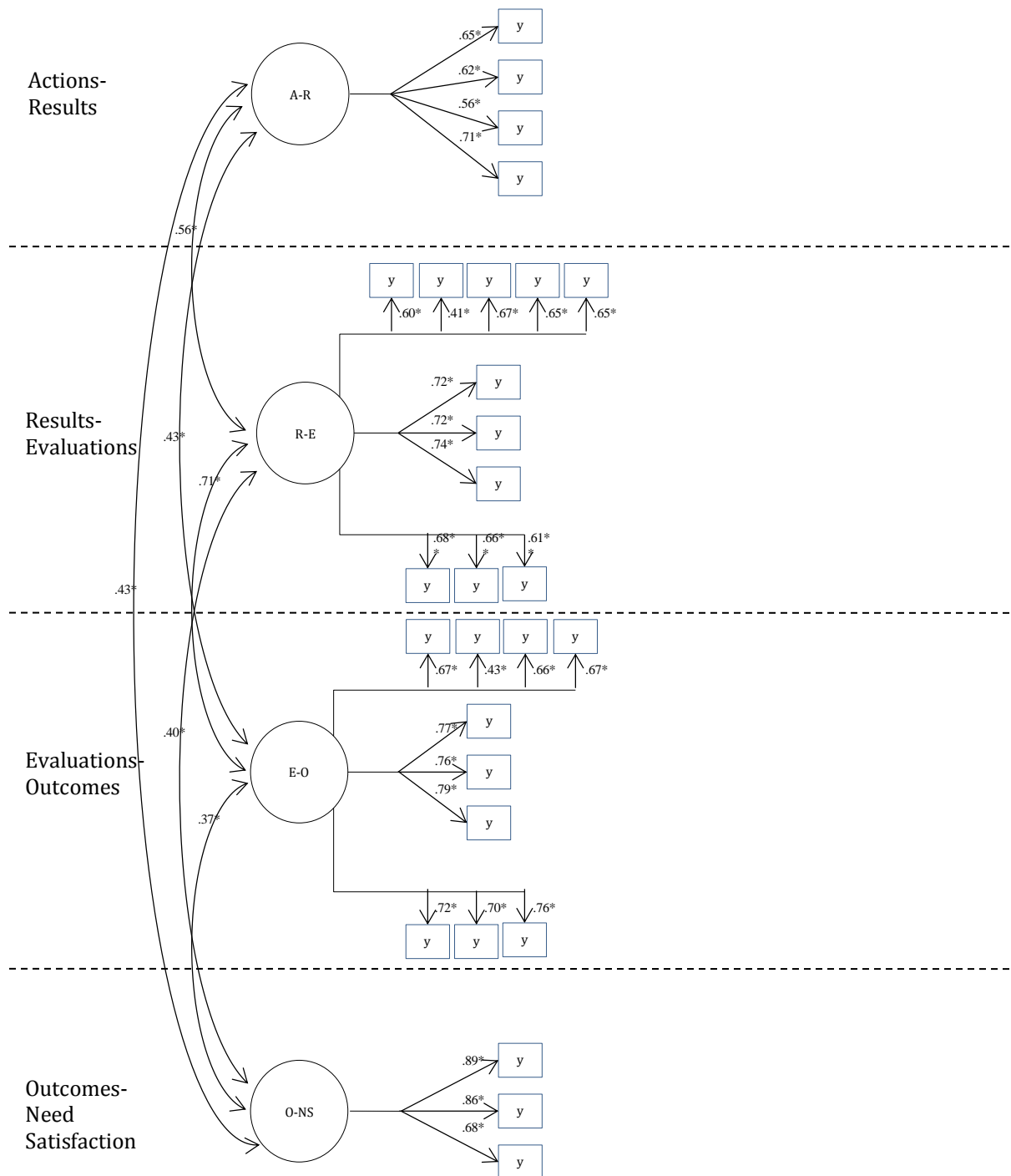


Figure 10: The Standardized Solution for the Four-Factor Model (Model 2). $\chi^2 = 1343.39$, $df = 344$. CFI = .78, RMSEA = .10, and AIC = 1467.39. * $p < .05$. ** $p < .01$

due to the source of evaluation (i.e., Self, Formal, or Informal), although the strength of the loadings on the Self/Formal/Informal latent factors suggests these items reflect Results to Evaluations/Evaluations to Outcomes variance to a greater extent than variance due to the source of evaluation (i.e., the average standardized loading on the Self/Formal/Informal latent factors was .42, while the average loading onto the Results to Evaluations and Evaluations to Outcomes latent factors was .58). When comparing the fit of this model to the proposed model, the proposed model appears to exhibit better fit (i.e., $\Delta\chi^2 = 93.68$, $p < .001$; $AIC_{\text{second-order model}} = 878.74$; $AIC_{\text{bifactor model}} = 990.55$), suggesting a minimal amount of variance due to the source of evaluation method across the Results to Evaluations and Evaluations to Outcomes items. The results of this model are displayed in Figure 11.

Single-Factor Model

This model was used as a point of comparison to examine the discriminant validity of the Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction latent factors. In this model, all of the items loaded onto one overall latent factor labeled “Motivation”. As expected, the model exhibited poor fit (i.e., CFI = .86, RMSEA = .14, and AIC = 2800.46), and when compared to the Four-Factor model (Figure 10), this Single-Factor model exhibited substantially worse fit ($\Delta\chi^2 = 1963.59$, $p < .001$; RMSEA 90% CI_{four-factor model} = .091-.101, RMSEA 90% CI_{single-factor model} = .14-.15, $\Delta CFI > .01$), suggesting initial evidence for the discriminant validity of the Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction factors. In addition, this model exhibited worse fit than the proposed model ($AIC_{\text{second-order model}} = 878.74$; $AIC_{\text{single-factor model}} = 2800.46$). The results of this model are displayed in Figure 12.

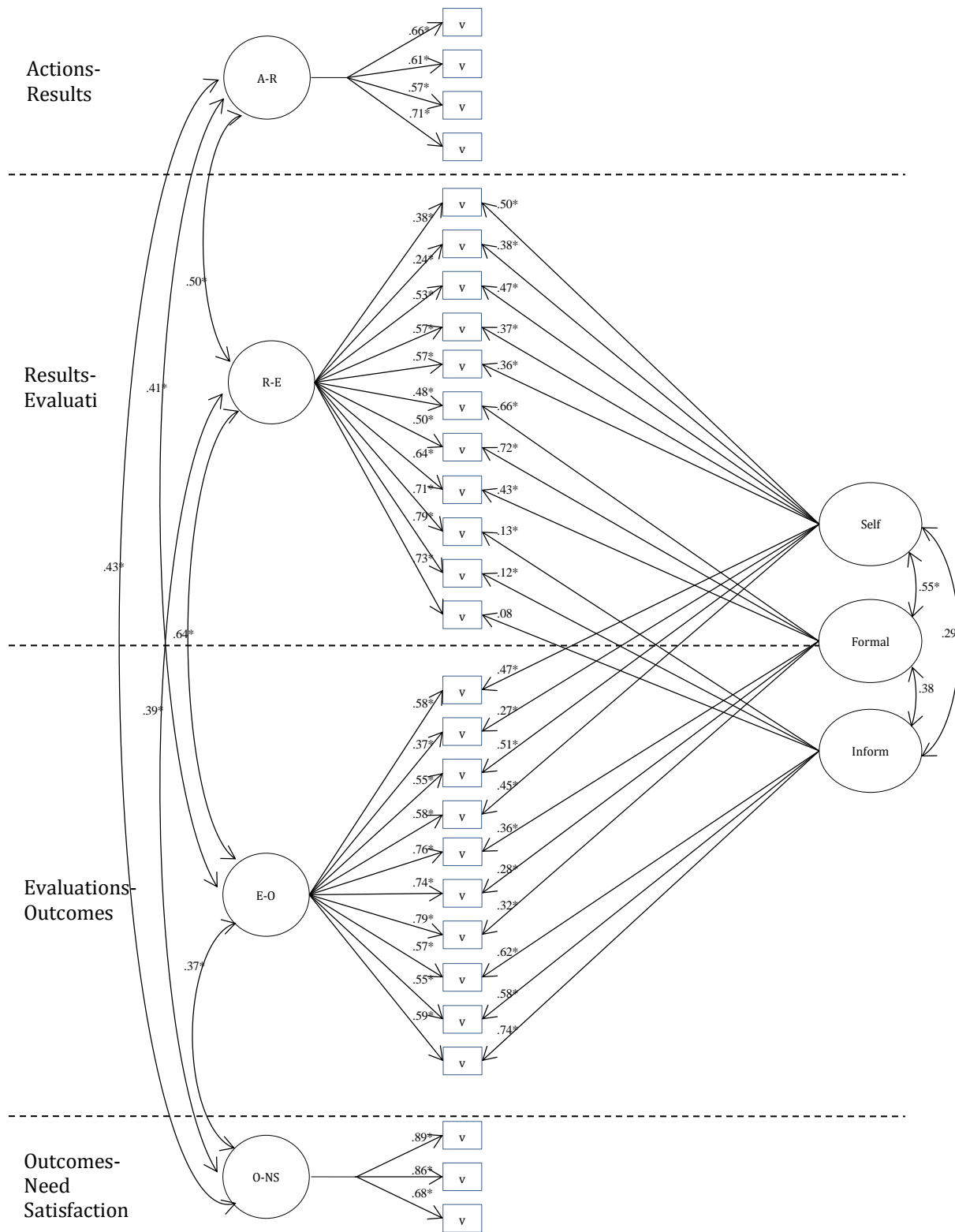


Figure 11: The Standardized Solution for the Bifactor Model (Model 3). $\chi^2 = 818.55$, $df = 320$. CFI = .96, RMSEA = .07, and AIC = 990.55. * $p < .05$

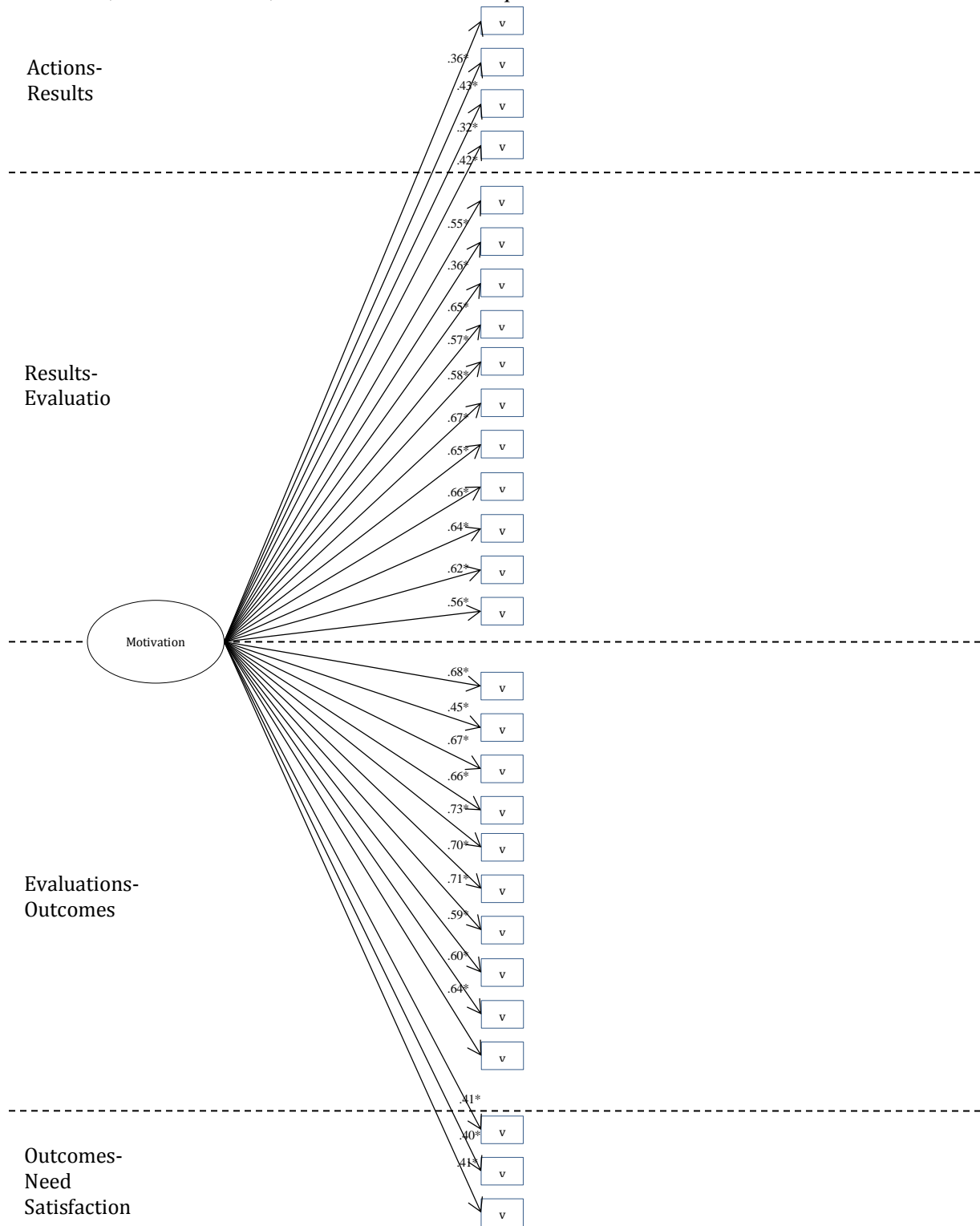


Figure 12: The Standardized Solution for the Single-Factor Model (Model 4). $\chi^2 = 2688.46$, $df = 350$. CFI = .86, RMSEA = .14, and AIC = 2800.46. * $p < .05$

Single-Factor Bifactor Model

In this model, the overall “Motivation” latent factor was used again, however the source of evaluation factors of Self, Formal, and Informal were included as well in order to examine the extent to which the items reflect these source of evaluation factors, as opposed to the motivation latent factor. As expected, this model exhibited moderately poor fit (i.e., CFI = .92, RMSEA = .11, and AIC = 1635.98), although the fit of this model is better than that of the single-factor model (i.e., RMSEA 90% CI_{single-factor bifactor model} = .10-.11, RMSEA 90% CI_{single-factor model} = .14-.15, $\Delta CFI > .01$), suggesting the Results to Evaluations and Evaluations to Outcomes items do capture variance due to the source of evaluation that is common across Results to Evaluations and Evaluations to Outcomes items. All of the factor loadings onto the Motivation, Formal, and Informal latent factors were significant but none of the factor loadings onto the Self latent factor were significant, and it should be noted that the strength of the loadings onto the method factors (.38) was, on average, weaker than the strength of the loadings onto the latent motivation factor (.53), suggesting the items are capturing variance in motivation to a greater extent than variance due to the source of evaluation. None of the completely standardized solutions were greater than 1.00. The correlations between the Self factor and the Formal and Informal factors were not significant. The correlation between the Formal and Informal factors was significant. The results of this model are displayed in Figure 13.

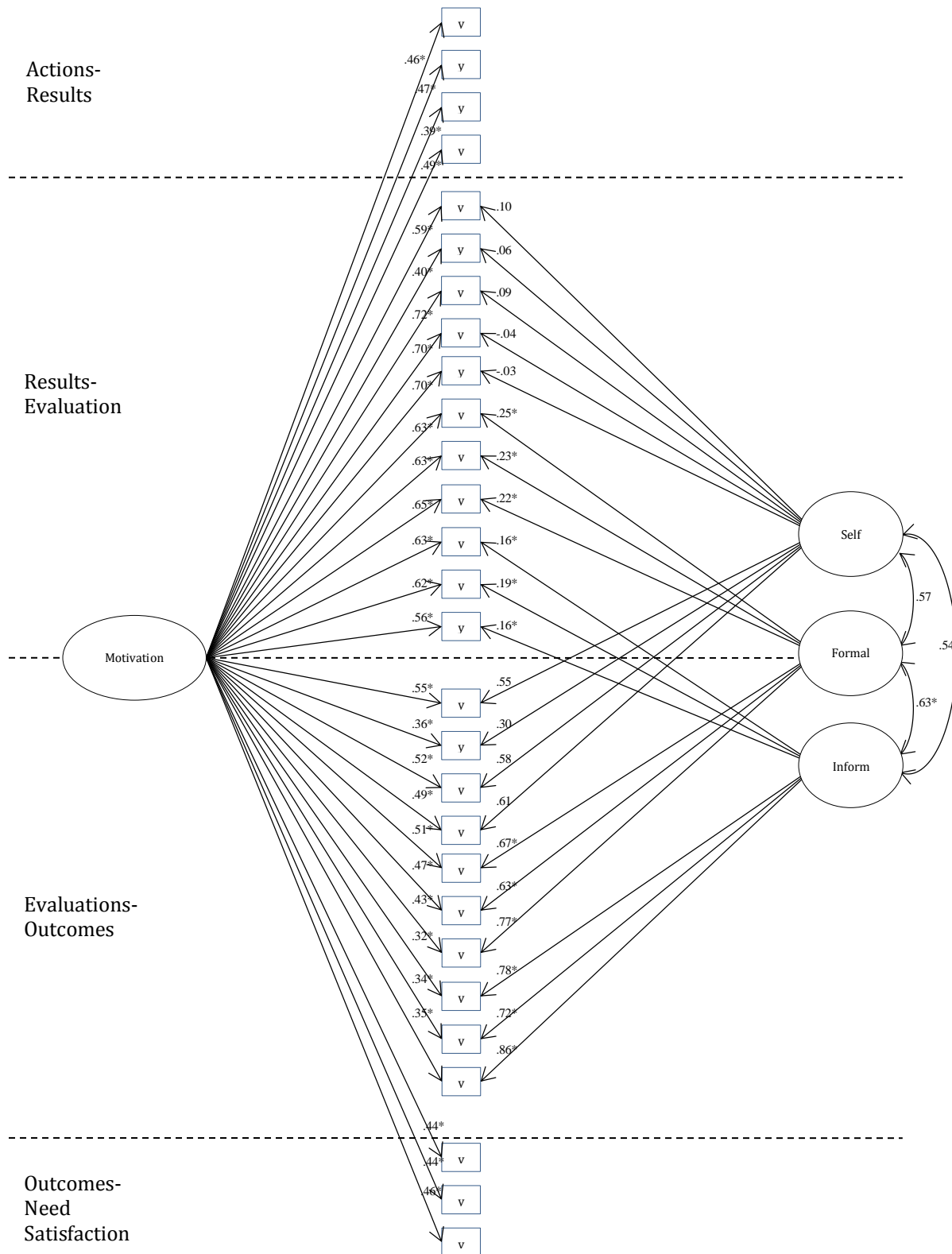


Figure 13: The Standardized Solution for the Single-Factor Bifactor Model (Model 5). $\chi^2 = 1475.98$, $df = 326$. CFI = .92, RMSEA = .11, AIC = 1635.98. * $p < .05$

DISCUSSION

Summary

This dissertation has presented a study designed to examine the structural properties of a new measure of motivation (i.e., the Motivation Assessment System, or MAS) which in turn was aimed at providing initial support for the Pritchard-Ashwood Theory of Motivation. To this end, multiple models were developed and tested to examine the fit of each model and the comparative fit of each model vs. the model implied by P-A Theory. The proposed model that was based on P-A Theory showed the best fit, providing support for the tenets of this motivation theory as well as the initial support for the measurement structure of the MAS.

This is a significant step for motivation literature, as it shows that the multiple motivation theories can be integrated into a single theory and measured with the MAS. These findings can be used to advance motivation literature as well as provide a practical tool that can be used in the professional world to analyze employee motivation and make organizational changes to improve the working lives of employees.

The two models with the best fit were the proposed Second-Order Model (i.e., the model implied by P-A theory) and the Bifactor Model. The proposed model involved four, correlated dimensions (Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction) that each represent perceptions about the extent to which one motivational construct (e.g., Actions) leads to another motivational construct (e.g., Results). Moreover, this model involved lower-order factors within the Results to Evaluations and Evaluations to Outcomes latent factors that represented whether the evaluation was provided through Self, Informal, or Formal means. The Bifactor model, in contrast, allowed the Results to Evaluations

and Evaluations to Outcomes items to double-load, once onto a latent Results to Evaluations or Evaluations to Outcomes factor, and once onto a Self, Formal, or Informal latent factor. The Bifactor model was intended to examine the extent to which the Results to Evaluations and Evaluations to Outcomes items contained variance due to the method of evaluation rather than the motivational construct that the items are designed to capture). Although both models displayed adequate fit (Second-Order Model: CFI = .91, RMSEA = .06; Bifactor Model: CFI = .96, RMSEA = .07), comparative fit indices suggest slightly better fit of the Second-Order Model (Second-Order Model AIC = 878.74; Bifactor Model AIC = 990.55). Therefore, I conclude the best-fitting model is the proposed Second-Order model, which supports four distinct, but related latent motivational constructs and lower-order factors involving the method of evaluation.

The three additional models tested included a model with no Self, Formal, or Informal latent factors (i.e., the Four-Factor Model: CFI = .78, RMSEA = .10), a model with a single latent motivation factor (i.e., the Single-Factor Model: CFI = .86, RMSEA = .14), and a model with a single latent motivation factor and three latent method factors representing Self, Formal and Informal evaluations (i.e., the Single-Factor Bifactor Model: CFI = .92, RMSEA = .11). These alternative models displayed poor fit (i.e., the Four-Factor Model and the Single-Factor Model) or moderately poor fit (i.e., the Single-Factor Model), supporting the notion that the content of the MAS is best represented by four distinct, but related motivational constructs (rather than a single latent motivational factor as in the Single-Factor Bifactor Model and the Single-Factor Model) and three latent factors representing Self, Formal, and Informal evaluations (rather than the Four-Factor Model that contained no latent constructs representing the three types of evaluation methods). In sum, a test of five competing models found the best fit for the

Second-Order model implied by P-A Theory, providing initial support for the proposed structure of the MAS as a measure of P-A Theory.

Limitations

The dissertation presented here is not without limitations. First and foremost, the MAS and P-A Theory were not examined in their entirety. The main theoretical basis of P-A Theory exists within the second component of the theory, also known as the “connection” component. Due to this fact, the connection component was the only part of the MAS that was studied. P-A Theory and the MAS also contain a first component that is intended to broadly measure a person’s motivation and a third component (also called the determinant component) that is intended to measure the underlying antecedents of motivation. The first component was not examined because there is concern about how the first component of P-A Theory interacts with the second component, or the connection component. The first component is based off of the broadest definitions of how motivation is described in the literature. Classically, motivation is described as how much energy a person exerts (i.e., Effort), where they exert that energy (i.e., Direction), and how long they exert that energy (i.e., Persistence; Naylor, Pritchard, & Ilgen, 1980). While a definition for this broad level of motivation exists, there are questions about how well it can be measured, and whether these measurements would line up cleanly with the connection component of motivation from P-A Theory. The biggest question about this relationship is in the direction measure. The direction measure in the first component of the measure asks questions that are meant to analyze if employees know where their efforts should be directed (e.g., “It is not clear to me how much effort to put into different parts of my job”). When examining the MAS at the connection component, it is not clear where or how the

direction measures are meant to be related to the connection component measure. For example, the closest matching questions given at the broad component would be from the Actions to Results connection (“When I put more effort into this job, the quantity and quality of my work goes up”). The first question clearly asks about an employee’s ability to understand if they know where to direct their efforts. The second question clearly asks if the results an employee produce increases proportionally to the amount of effort they put into their work. These are not representative of the same construct. Therefore, future research should determine how to more firmly connect the broad measure of motivation to the more specific connection measure of motivation. Because the crux of P-A Theory is in the connection component, this was the main focus due to the fact that further research into P-A Theory could not continue without support for this component.

The third component, or the determinant component of the MAS was left out because it was not designed to have traditional scale properties that are suitable for reliability and factor structure analysis and is most likely unable to stand up to psychometric evaluation. The determinant component was developed to understand specifically why a connection would be low or high, allowing for the practitioner to be able to create targeted interventions for any determinants that have caused poor connections in the motivational process. The MAS and P-A Theory would benefit from future research aimed at further developing the determinant component. The biggest problem with this would be coming up with sets of determinant items that seem to be measuring the same construct. For example, the item “I do not have some of the key abilities to do my job” and the item “I have plenty of chances to try out better ways of doing the job” both fall under the determinants of the Actions to Results connection, however, they do not seem to be capturing the same overarching construct. One possible solution to this issue

would be to create a number of higher-order latent variables within the determinants that theoretically cause the connection latent variables. For example, one could create an “Abilities” latent variable with a number of items and a “Work Strategy” latent variable with a number of items. These latent constructs could then be theoretically related to the Actions to Results connection measure, allowing for a testable causal relationship between the connection component and the determinant component of the MAS. Obviously, the number one problem with this approach would be the exponential growth that the length of the MAS would face. Instead of one question measuring “Ability” like exists right now, there would need to be 3-5 questions to have appropriate traditional scale properties. There are 38 total determinant constructs meaning that this approach would lead to the determinant component having between 114 and 190 items. This would most likely be too lengthy for any practical purpose. However, if this were studied and supported, at least it would lend theoretical support to the tenets of the MAS and P-A Theory, even if it is not very practical for use in the applied world.

The next concern dealing with the MAS revolves around the idea of methodological heterogeneity. Nunnally and Bernstein (1994) explain the importance of balancing a scale with different forms of questioning. The reason for this is that if a survey only has items asked in a specific manner (e.g., all positive questions with yes or no response options), then the survey may not be measuring the intended trait that the measure was designed to examine. Instead, the measure could be examining a person’s propensity to give a specific type of response (e.g., a person’s willingness to say “yes”; Nunnally & Bernstein, 1994). As is evident in the MAS, there are many different ways that the items are worded. Some are worded positively (e.g., “The higher the quantity and quality of my work, the more highly I evaluate my work”) and some items are worded negatively (e.g., “The quantity and quality of my work have no effect on my

evaluations of my work”). The idea of methodological heterogeneity was extended as well to the Likert response options. There is a wide range of response scales that are used in the MAS (e.g., “Decrease – Greatly Increase”, “Strongly Disagree – Strongly Agree”, “Never – Always”, “Get Worse – Improve Greatly”, “Very Low – Very High”, “Get Worse – Get Much Better”, and “Not Important To Me – Very Important To Me”) with the hope that this approach will prevent the recorded responses from being caused by measurement effects instead of the true underlying constructs that are trying to be measured.

This practice of off-setting items to create a balanced scale, labeled acquiescence, has been questioned more recently. Researchers have shown that acquiescence can cause a multifactor structure due to the item wording (e.g., for a scale with positive and negative keyed items, it would have positive and negative factors; Alessandri, Vecchione, Fagnani, Bentler, Barbaranelli, Medda, Nistico, Stazi, & Caprara, 2010). This “method effect” has been shown to have criterion-related validity (Rauch, Moosbrugger, & Schweizer, 2007), convergent validity across surveys (DiStefano & Motl, 2006), and test-retest reliability (Billiet & Davidov, 2008).

Due to these findings, there is reason for concern regarding the extreme methodological heterogeneity in the MAS. Not only does the MAS contain items that are keyed positively and negatively, there are also eight different types of response formats. If the recent studies are correct and there is a method effect, it would be hard to remove this method variance from the current results to isolate unique, construct-related variance. Future research could attempt to remove any method effects by re-wording the items such that they are all keyed in the same direction and by providing only one type of response option. If this were done, the two versions of the MAS could be compared to determine if one has better fit than the other.

Problems with Generalizability

While this first study provided support for the MAS and P-A Theory, problems exist with the sample in regards to generalizability. Most of the participants of the current analysis are young adults, with 73.5% of participants being below the age of 30. This is not surprising due to the fact that most of the sample came from college students. As in most psychology studies, this is not particularly representative of the average employee sample (i.e., the population for which the MAS was designed).

An additional concern related to generalizability is that because most of the participants are so young, most of them (53.2%) do not have any subordinates. This sample does not provide us with a way to extend the findings of the MAS to workers who would have a significant number of subordinates. Future research could account for these convenience sampling problems by recruiting a large-scale organization to be part of a study. This would allow the MAS and P-A Theory to be tested in a more realistic setting.

Correlations Between Connections

It was expected that the Actions to Results, Results to Evaluations, Evaluations to Outcomes, and Outcomes to Need Satisfaction connections would be correlated. As the Second-Order Model results demonstrate, these four factors do appear to show moderately strong latent intercorrelations. Theoretically, these four factors should be correlated because each is explaining a portion of the overall motivation process, meaning it would be necessary to assume that they would be related in order to estimate the motivation process shown in Figure 1. However, there are still some questions surrounding this issue. Theoretically, as the connection latent factors are described by Pritchard and Ashwood (2008), it could be reasonably interpreted that each latent connection factor should be viewed within its own silo and that there should be

no relationships between the connection latent factors. The reasoning for this is because the connection strengths are based on perceptions between two specific motivation components at a time, meaning it would not make sense that a different perception of the relationship of two other motivation components would affect the already existing relationship on the first set of motivation components. For example, if a person perceives that the outcome of being given a raise for successfully completing a project will lead to a strong feeling of need satisfaction to make more money and provide for this person's family, that relationship should exist no matter what is happening within other connections. If this person does not feel that they have the necessary resources to carry out the actions that would lead to successfully completing the project, the perception that successfully completing the project and getting the raise to fulfill the need to make more money should not change. Even though the project is harder to complete, if somehow the individual does complete the project, they should still feel that their need to make more money will be fulfilled.

It is possible that in this study the relationship that was found between the latent connection factors was due to either a poor sample or due to the MAS being a poor measure of the P-A Theory. 68% of the subjects had not completed college, meaning that they may not have extensive experience in the work world. Therefore, they might not have a lot of experience with the different motivation connection components in professional settings. For example, these subjects might not have the experience of completing a big project that leads to a raise. Therefore, they might only have information that is conveyed to them by their supervisors that if they do successfully complete big projects, they get raises. In this instance, the individuals' perceptions will be developed around what they are being told by others at work. With this understanding, if the subjects are then not given the resources to perform their work, it would be

reasonable to assume that the negative perceptions from the Actions to Results connection could lead to negative perceptions of future connections because the first and only experiences that these individuals have had at work have been negative. In a sample with more experienced workers who have dealt with each motivation connection, they could realize that one negative connection would not adversely impact another connection.

The other issue is the way the MAS items are written. For example, one of the Actions to Results items is “If I increase the amount of effort I put into this job, the quantity and quality of my work” with Likert response options ranging from “Get Worse” to “Improve Greatly”. One of the Outcomes to Need Satisfaction items is “The job outcomes I can get on this job are valuable to me” with Likert response options ranging from “Strongly Disagree” to “Strongly Agree”. It could be fair to assume that if a person answers the Actions to Results item negatively that they would also respond negatively to the Outcome to Need Satisfaction item. The individual could be thinking that they cannot get job outcomes because their actions do not lead to desired results. If the Outcome to Need Satisfaction item were written to provide a premise stating “Assuming that you are able to get desirable results, evaluations, and outcomes in your job, do believe the job outcomes that you get would be valuable to you?”. Future research might benefit from rewriting the MAS items to remove any possible relationship between the latent connection factors to better represent the silo interpretation of the P-A Theory of Motivation

Scale Validation

The results of this dissertation appeared to support the factor structure of the MAS and P-A Theory of Motivation. However, this does not mean that the MAS is ready to be used as a legitimate measure of motivation. There are still a number of additional psychometric issues that

need to be investigated in order to provide legitimacy for the claim that the MAS is a successful measure of motivation. Specifically, the MAS would benefit from examinations of criterion-related validity, convergent validity, and discriminant validity.

Criterion-Related Validity

Nunnally and Bernstein (1994) explain criterion-related validity as a way to determine the extent to which a measure is able to estimate a behavior that is external to the instrument itself. For instance, the MAS is purported to measure a person's motivation and motivation has been positively linked to work performance (Pritchard, Harrell, DiazGranados, & Guzman, 2008). Therefore, it would be expected that the MAS would positively correlate with a measure of employee performance. Future research should estimate the criterion-related validity of the MAS by estimating the relationship between MAS scores and job performance ratings in a field sample of employees.

Convergent Validity

Campbell and Fiske (1959) explain convergent validity as the extent to which two measures that are designed to assess the same construct intercorrelate. This means that one important validation step for the MAS is to show that it is correlated to other measures of motivation. This would provide support for the idea that the MAS is actually measuring the intended construct of motivation. Future research should investigate the extent to which the MAS correlates with other measures of global motivation in employee samples in order to establish convergent validity.

Discriminant Validity

Campbell and Fiske (1959) explain discriminant validity as the confirmation of a measure by comparing it to another measure that it was not designed to correlate with. Discriminant validity is tested by comparing the target measure to another measure that was designed to measure a construct that is not expected to relate to the intended construct of the target measure. If a large relationship is found, this could mean that the target measure is not measuring the intended construct, but rather some different construct. For the MAS, a good test of discriminant validity would be to compare the MAS results to the results from a job satisfaction measure. While it could be reasonable to assume that the two constructs would be related, it would be assumed that the relationship would be no more than moderate as they are intended to represent different constructs. If the MAS correlates too highly with a job satisfaction measure, it would be cause for concern as the MAS might not be measuring employee motivation, but rather job satisfaction. However, if the two measures have low to moderate correlations, it would provide support for the MAS and the P-A Theory as it would support the idea that the MAS is measuring a separate construct.

Motivation as a Mediator

Motivation has been explained as the basis for everything that humans do (Pritchard & Ashwood, 2008). Therefore, it would be important to examine relationships where motivation would serve as a mediator. In the past, these types of studies have not truly been possible because an integrated measure of motivation did not exist. With the creation and support of the MAS, research can now use motivation as a measurable mediating variable.

Leadership and Motivation

One instance of looking at motivation with another construct would be to measure if motivation mediates the relationship between leadership and performance. Most leadership and motivation research does not break motivation down to its components but rather looks at how leadership affects overall motivation. This is problematic because it does not tell us specifically how different styles of leadership or different measures of leadership effect motivation differently. This makes using the leadership literature as a means of motivating employees difficult and hard to show support for in practical settings. One example of this can be found in the literature looking at transformational leadership and contingent reward leadership. Both types of leadership have been shown to have similar effects on employee motivation but the research does not tell us if they are impacting the same parts of the motivational process or different parts of the process (Judge & Piccolo, 2004). Without knowing what parts of motivation each style of leadership is effecting, it is difficult to know which of these two leadership styles to recommend to an organization whose employees are experiencing low amounts of motivation. Looking at leadership and its effects on motivation in this global manner is common throughout the leadership literature (Zaccaro, Rittman, & Marks, 2001). It is important to determine where different leadership styles are impacting the motivation process so that it can then be determined how leadership is able to effect performance through motivation. Therefore, it would make sense for future research to determine if leadership actually effects performance through the mediator of motivation.

Personality and Motivation

Going beyond situations within the workplace that may lead to changes in motivation levels and therefore performance, it is also reasonable to expect that individual differences could

lead to differences in the motivation level of employees. This idea is crucial to consider given the importance often placed on selection tests when determining which applicants an organization will hire. Future research could examine personality differences among individuals and determine if these differences lead to differences in performance through the mechanism of motivation measured by the MAS.

In a previous meta-analysis of the relationship between personality and motivation by Judge and Ilies (2002), only two personality factors had significant relationships with motivation over a wide range of different motivation theories. These two factors were conscientiousness (average validity = .24) and neuroticism (average validity = -.31; Judge & Ilies, 2002). Due to the fact that P-A Theory is an integrated theory of motivation, it would be expected that if P-A Theory would be significantly related to any of the personality factors, it would be these personality factors that have shown the most resilient of relationships with numerous motivation theories in the past. Therefore, future research could study where personality has been looked at in relation to P-A Theory. If the factors of conscientiousness and neuroticism do not produce a meaningful relationship, it can be logically conclude that the other three Five Factor Model factors would have less of a chance of showing a meaningful relationship.

There has been a substantial amount of research looking at personality and motivation or personality and performance. However, not as much research has been done to look at if personality explains performance through the mechanism of motivation. The most notable work to look motivation as a mediating variable has been completed by Barrick, Mitchell, and Stewart (2003). They explain a mediating motivation variable made up of goal setting and needs theory that they call *Accomplishment Striving*. They discuss how conscientiousness and neuroticism impact performance through the Accomplishment Striving variable (which they also describe as

“work motivation”). Barrick et al. (2003) believes that with an understanding of the cognitive processes (such as motivation) that mediate the relationship between personality and performance, we will have a better ability to predict and understand behavior in the workplace.

Therefore, this concept becomes an important point to look at due to its potential practical implications. If personality does in fact explain performance through motivation, it will allow us to understand why certain personality types actually perform well on the job and it will allow us to create better and more valid selection tests.

In the meta-analysis by Judge and Ilies (2002) that examined personality and its relationship with motivation, they sum up their research by suggesting that it could be very important to look at motivation to see if it is a mediator between personality and performance. They suggest that “if personality affects performance mostly through motivation, and neuroticism and conscientiousness are the best predictors of performance, then it would almost have to be the case that these two traits best predict performance motivation³” (Judge & Ilies, 2002, p. 803).

Judge and Ilies (2002) also sum up their study saying that mainly only three different types of motivation have been looked at in regards to personality and that other theories need to be looked at. P-A Theory and the MAS allows us to examine if motivation does serve as the mediator between personality and performance as well as allowing us to examine a theory of motivation that can be said to contain parts of most of the theories of motivation that are available. Therefore, future research should examine if motivation mediates the relationship

³ “Performance motivation” is the term that Judge and Ilies (2002) use to describe performance that is explained through motivation.

between conscientiousness and neuroticism with performance and this research can be done using the measure of motivation examined in this study.

Conclusion

The current paper provided initial support for P-A Theory of Motivation as measured with the MAS. These results provided tangible evidence for an integrated theory of motivation that brings the major theories of motivation together under one roof. This advancement within motivation research not only opens the door for future research concerning motivation and how it relates to other constructs of interest, but how motivation can be measured and improved in the workplace. This study helps to bridge the gap between research and practice by providing practitioners with a theory based and research supported measure of motivation at work. With the future research laid out above, there is clearly plenty to build on from this point.

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