

INITIAL TESTING OF THE CONTINUOUS EMPLOYEE DEVELOPMENT MODEL:
OUTCOME EXPECTATIONS AND WORK-RELATED IMPLICIT THEORY

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Psychology
in the College of Sciences
at the University of Central Florida
Orlando, Florida

Summer Term
2006

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ABSTRACT

Understanding and promoting lifelong learning in employees is important for employees' future marketability (Robinson & Rousseau, 1994) and for creating learning organizations (Senge, 1990). To further this understanding, components of a model of the motivation to engage in continuous employee development (Garofano & Salas, 2005) were tested. New scales were created for work-related implicit theory and outcome expectations and the validity of these scales and these variables in the model were investigated. Alternate models were also contrasted with the Garofano and Salas model (2005). The study used self-report surveys administered to staff and faculty recruited from training classes in higher learning institutions in a three month longitudinal investigation. The results suggest that work-related implicit theory is a valid contributor in this model but that modifications to the model may be beneficial, including a more complex central motivational component. Implications of these results for organizational practice are discussed along with study limitations and future research implications

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INTRODUCTION

In the last 20 to 30 years organizations have had to face challenges like increased global competition and rapid technological changes (Kraut & Korman, 1999).

Adaptations to these have included large scale “restructuring” or downsizing, hiring of contract or contingent workers to fill specified needs, and keeping operating and training budgets lean (New York Times, 1996). From the employee perspective, this has been a dissolution of the traditional career contract, namely, a decrease in employers’ commitment to retain employees (Robinson & Rousseau, 1994). Also from this perspective, there has been a shift in responsibility for skills and training from organizations to individuals. This is evident in the termination of obsolete employees (Fossum, Arvey, Paradise & Robbins, 1986) and in the increasing amounts of training that are required of incoming job incumbents (McCauley & Hezlett, 2001), despite the fact that many organizations still have large training budgets. Both of these mean that employees need to take greater personal responsibility to ensure their skills are current and/or marketable (Arnold, 2001; Fossum, Arvey, Paradise & Robbins, 1986).

From the organizational perspective, adaptive workers are highly desirable. The increasing number of temporary and contract employees suggest that workers with pre-trained specific skills are often an ideal (Hall & Mirvis, 1995; McCauley & Hezlett, 2001). Organizations seeking to attain other ideals, like the learning organization as described by Senge (1990) require employees committed to long-range learning goals and both personal and organizational transformation (Stuart et al., 1996). Thus, from both of these perspectives, employees engaging in self-motivated ongoing employee

development is beneficial because employees gain greater employability and employers gain employees who can help them respond quicker to market or industry changes.

Changes have also occurred in the demographics of the workforce. Not only are there greater numbers of older workers in the workforce, but most workers no longer follow a single linear career path (Sterns & Hyuck, 2001). Hall and Mirvis (1995) have noted these changes and labeled this non-linear growth as “protean” career development. The protean career is characterized by career management and development that is self, and not company, directed. It is not necessarily tied to growth in any single organization or even job category and therefore involves more personal responsibility and motivation. Because this development is not necessarily tied to current company needs it can create a greater diversity in employees’ knowledge and skills, thus also creating an adaptive workforce that could respond more quickly to market or industry changes. Because this motivation is self-induced, it is related to the kind of development described above as beneficial for both organizations and employees. Understanding protean career development would therefore help both individuals and organizations and understanding the motivation process that produces it could help foster and encourage its growth. Organizations could seek new employees most likely to engage in this development and encourage it in their current workforce.

Unfortunately, a good understanding of the motivation process involved in ongoing self-directed career development does not yet exist because prior conceptualizations of career development do not map a continuous process (Maurer, Weiss & Barbeite, 2003) or explain the motivations of employees to engage in sustained or repeated development activities (Colquitt, LePine & Noe, 2000; Lent, Brown &

Hackett, 1994; Phillips & Gully, 1997). Therefore, a new conceptualization or model is needed to guide future organizational practice and research in this area.

To provide this conceptualization, the continuous employee development model (Figure 1) was created (Garofano & Salas, 2005). It is a proposal of the factors and processes involved in the motivation to engage in employee-related development on a continuing basis (Garofano & Salas, 2005). It is a summary of prior research and related theory on the topic from the fields of career development, training motivation, and education. The model's propositions and the research supporting them will be summarized below. As a brief introduction, there are four categories of antecedents: stable factors including age and career stage; malleable characteristics including occupational self-efficacy, work domain learning goal orientation, work-related implicit theory, work centrality and career exploration; as well as previous developmental work experiences, and the organizational and larger economic environment. The latter two both influence the malleable characteristics and all the antecedents form an individual's outcome expectations, or beliefs about the likelihood of valent outcomes from engaging in development behaviors. These beliefs, in turn, predict intentions to develop. The relationship between outcome expectations and intentions is moderated by an individual's non-work personal environment, which will dictate the energy resources they can devote to development. Intentions to develop then predict developmental behaviors. Following development behaviors, it is not their outcome per se, but rather an individual's cognitive appraisal of the outcome of this behavior that fuels or discourages future development motivation. Two moderators affect the outcome of this appraisal process as well, implicit

theory, and learning goal orientation. Thus, the continuous employee development model illustrates a motivational process with a cognitive feedback loop.

To provide additional theoretical rationale for the creation of the continuous employee development model, in the following sections, the construct of continuous employee development will be differentiated from related concepts, and then prior related models will be reviewed. This review helps explain why some variables and connections were included in the continuous employee development model, but also what unique contributions are made by the model. The research and theory supporting each of the variables in the model and their connections will also be presented. This information will further serve as the rationale for research on this model described below.

While study propositions are given for the entire model (Appendix A), a portion of the model was chosen for preliminary research. This study is intended as a preliminary test of some of the connections in the continuous employee development model and of the validity of some of its variables. Hypotheses for this study are presented with the explanation of the model, and the study procedure, participants, and methods are then presented. The results of the study, conclusions, applications, and limitations follow these, and future research recommendations are discussed.

As a summary, the study was a three month longitudinal investigation of some of the antecedents and the central motivational factors in the continuous employee development model. Participants were staff and faculty recruited from training classes in higher learning institutions. Self-report surveys were administered and analyses of the hypotheses included alternate model comparisons using structural equation modeling. The results suggest that work-related implicit theory is a valid antecedent in the model

but that modifications to the continuous employee development model may be beneficial, including a more complex central motivational component.

DEFINING CONTINUOUS EMPLOYEE DEVELOPMENT

The introduction presents an argument for why continuous employee development should be understood. But answering how this understanding can be pursued, that is, knowing what previous research and theory is applicable, requires formally defining this concept and placing it in a nomological network. Therefore continuous employee development will be defined and differentiated from related concepts. First, the concepts of learning and development will be distinguished, then continuous employee development will be differentiated from related concepts: lifelong, continuous, and self-directed learning, and career development.

Continuous employee development (CED) is defined as a cyclical process in which employees are motivated to plan for and engage in actions or behaviors that benefit their future employability on a repetitive or ongoing basis. The term development, and not learning, was used in this definition because development is a more precise term for labeling the motivation to engage in ongoing employee-related growth. Though both learning and development are similar concepts they do differ enough in their meaning that one is a more appropriate choice.

The Merriam-Webster Online (2005) defines learning as the gaining of knowledge, understanding or a skill. The definition of learning motivation as the willingness to engage in the process of learning (Ames, 1992) also makes reference to learning as a process. Alternatively, Kraiger, Ford and Salas (1993) have written about the cognitive, skill-based and affective outcomes of learning, emphasizing the fact that learning can refer to results or to a process. In contrast, Merriam-Webster Online (2005)

defines developing as the “process of natural growth, differentiation, or evolution by successive changes”, and development as “the act, process, or result of developing”. So development can also refer to an outcome or a process but it also refers to “successive changes” which are similar to the ongoing or continuous nature of the concept under investigation. Learning does not similarly imply an ongoing process.

The differences in meaning between the terms career development and career learning (Super and Hall, 1978), and the very different processes that these terms refer to also suggest that development may be a more appropriate term for this concept. Though it has been given different definitions by different authors (Super and Hall, 1978), career development implies a progression through stages or jobs and career learning does not necessarily do so. Rather, it implies a more finite collecting of knowledge about a single or multiple careers. Thus, development is a more appropriate term for describing the ongoing processes involved in CED. The term continuous was also used to emphasize that the development remains employee-related.

Continuous employee development can also be distinguished from other related concepts including lifelong learning, continuous learning, and self-directed learning. Lifelong learning is not the same concept as continuous employee development mostly because the two differ in breadth. Lifelong learning is defined as all learning activity taken throughout life with the aim of improving knowledge, skills, and competencies within a person, civic, social and/or employment perspective (European Report on Quality Indicators on Lifelong Learning, 2002). It is not specifically focused on employee development and it is not restricted to behavior that will be beneficial to the individual as a present or future employee. Therefore, as a concept, it does not

specifically address how and why employees are motivated to engage in ongoing employee-related development.

In contrast, continuous employee development restricts its focus to the portion of individuals' lives in which they are interested in engaging in some form of employment. This is an important distinction from a research standpoint because if any behavior can qualify as a lifelong learning activity, and from the definition it can be argued that many behaviors could, it is difficult to operationalize this domain space. That is, if everything qualifies as an example of a concept, then the concept is of limited utility.

Continuous learning is also not the same concept as continuous employee development. For example, Noe and Colquitt (2002) define continuous learning as directed and long-term effort to learn, desire to acquire knowledge and skills, and participation in activities that facilitate learning. Though this definition suggests that continuous learning and CED are conceptually similar, it also shows that this term is not restricted to employee-related development. In addition, it is used inconsistently by different authors. Hans and Williams (2005) define continuous learning as, "the process of development in which planning, learning, and applying new knowledge and skills occur in changing organizational conditions" (p. 2). Not only does this definition conflate learning and development, it implies that the term *only* refers to employee-related development, though it is arguably restricted to learning regarding one's present position. In contrast, continuous employee development can involve development for current or future unrelated positions.

Continuous employee development can also be differentiated from self-directed learning for similar reasons. Self-directed learning is a term from the educational

literature and can refer to both an instructional method and a personality dimension (Brockett & Hiemstra, 1991). Further, Candy (1991) notes it can refer to one of four different concepts; (1) a personal attribute, as in personal autonomy, (2) willingness and capacity to conduct one's own education, or self-management, (3) a mode of organizing instruction in formal settings, also known as learner control, and (4) individual non-institutional pursuit of learning opportunities, or autodidaxy. In addition, Garrison (1997) adds to these self-monitoring, which he defines as occurring when an individual takes responsibility for constructing new information from learned material according to preset goals, and the notion of self-directed learning as a motivation composed of two parts, the entering motivational state that shapes intentions and the task motivation or volition to sustain efforts. Thus, there are components of self-directed learning in CED, especially where motivation is conceived as originating from, but the former is much broader in focus than CED. In addition to this difference in breadth, continuous employee development is necessarily concerned with ongoing processes. In contrast, early work operationalized self-directed learning as a discrete process that could, but did not necessarily, reoccur (Tough, 1971) and the above definitions show that the terms can be, but are not necessarily concerned with these (Brockett & Hiemstra, 1991).

Thus, continuous employee development, when defined as a cyclical process in which employees are motivated to plan for and engage in actions or behaviors that benefit their future employability on a repetitive or ongoing basis, is a distinct term from continuous learning and a more specific term than both self-directed learning and lifelong learning. It is a subset of both of these broader concepts, sharing with lifelong learning a focus on ongoing processes and with self-directed learning a focus on self-driven

motivation. However, it is unique in its focus on self-driven motivation to engage in employee-related development. The next section will describe how the development of the continuous employee development model was influenced by prior related models.

Prior Models

The model of continuous employee development was derived from the research and theory of fields like self-directed learning (c.f., Candy, 1991), training motivation (c.f., Colquitt, LePine & Noe, 2000) and career development (c.f., Maurer, Weiss & Barbeite, 2003). Prior models from these fields were also used to help form the continuous employee development model (cf. Colquitt & Simmering, 1998; Maurer, Weiss & Barbeite, 2003; Noe & Wilk, 1993; Noe, Wilk, Mullen & Wanek, 1997), though it is argued that the present model is unique in its focus; explaining how or why employees are motivated to engage in ongoing development activity. In addition, it is the only model that specifies a mechanism for how prior development behavior affects future motivation to engage in development activities.

Previous models that have addressed employee development issues include models of career stages and career development (Hal & Mirvis, 1995; Katz, 1980; Lent, Brown & Hackett, 1994; Super, 1957), models of the motivation to engage in specific learning or training (Colquitt, LePine & Noe, 2000; Phillips & Gully, 1997) and other models of development (Maurer, Weiss & Barbeite, 2004). These models will be briefly reviewed below with special focus on the contributions each model made to the CED model. Variables chosen from these models will also be highlighted but the evidence for

their inclusion and placement in the CED model will be presented in the following section on the model propositions and hypotheses.

Early models of career development were composed of linear progression through stages. They were primarily normative descriptions of an individuals' linear progression through life stages, sometimes accompanied by age ranges (cf. Super, 1957). In these early models, individuals start off as active learners but eventually focus on consolidating their position and slowing, or ceasing all together, learning about their jobs and careers. Later models broke from this linearity to various degrees, for instance, Super acknowledged that these stages could cycle when new positions or career paths were taken (Super & Hall, 1978) and Schein's (1978) model accommodated both vertical and horizontal occupational moves and transitions to new organizations. Katz's (1980) model of job longevity also included stages that were repeated every time an individual was promoted or moved to another organization.

More recent models of career stages have added additional reasons for these cycles, like a changed economic environment (Hall & Mirvis, 1995). As noted earlier, Hall and Mirvis also argued that economic changes have resulted in individuals having increasingly more responsibility for their careers' direction than their employers. Further, this resulting "protean career" also creates a blurring of the roles between work and non-work as individuals' roles continue to change over the life span (Hall & Mirvis, 1995). The continuous employee development model draws from the career development literature this notion that both work and non-work factors can influence development decisions and the notion of the protean career as the model attempts to outline the processes involved in individual workers' career development decisions.

A career development model that also incorporates motivational factors is that of Lent, Brown, and Hackett (1994), although it is technically a model of the development of career interests. In their model, past experiences create individual differences and outcome expectations that influence career interests. The continuous employee development model draws from this model the variable outcome expectations and shares their notion that the outcomes of engaging in behavior can create a feedback loop to the models' antecedents, although Lent, Brown and Hackett's (1994) model describes a different process. There is a model of the development of career interests and not employee development per se. Models that attempt to explain career choice, or what field of work an individual chooses to enter, like Holland's (1997) RIASEC theory of vocational choice based on "vocational personality", are not models of learning or development at all. More recent work by these authors supports the formation of a model like the CED model, though, identifying as important constructs in career research many of the same variables included in the CED model (Lent & Brown, 2006).

Models of training motivation come closer to addressing individuals' motivations to develop, though they are more focused on the motivation to learn certain academic or training materials, or the motivation to engage in specified training activities only. For example, Phillips and Gully (1997) use personality characteristics and self-efficacy to explain differences in set goals, which are used to predict differences in performance on a specific academic task. Because goal setting and planning is also necessarily involved when making decisions to engage in development, antecedents from this model, specifically, self-efficacy and learning goal orientation, were also considered for inclusion in the continuous employee development model.

Noe and Colquitt (2002; Colquitt, LePine & Noe, 2000) also integrate personality variables, characteristics of the work environment, and attitudes towards job and organization in their model of training motivation. As there are some similarities between the motivation to engage in single or specific development activities and the motivation to engage in continuous or ongoing development, models of training motivation were helpful in suggesting possible antecedents. Variables from this model that were chosen for possible inclusion in the CED model included career exploration, goal orientation, age, and the variables climate and job involvement, although these latter variables ended up being conceptualized differently in the CED model.

However, there are also important differences between not only models of training motivation and the continuous employee development model but also between the two kinds of motivation as well. First, the models differ in their focus or the output variables of the model. Training motivation models are interested in learning and/or transfer and job performance, and the effect that training motivation can have on these variables. The continuous employee development model is interested in the motivation to develop itself and is only interested in learning or performance change to the extent that they are positively appraised by the employee, because it is appraisal of development outcomes that is proposed to influence future development motivation. Another important difference between them, therefore, is a temporal one. Models of training motivation outline a more static process whereas the continuous employee development model is interested in mapping an ongoing process and therefore in understanding the effects of development behavior on future development motivation.

The work-related development model of Maurer, Weiss and Barbeite (2003) is the most similar existing model to the continuous employee development model. It is similar to the CED model in that their model sought to identify the antecedents and motivational factors predicting involvement in work-related learning and development activities, but different in the proposed outcomes of the model. Therefore, it provided several suggestions for antecedent and motivational variables that could be included in the continuous employee development model. For instance, they proposed reciprocal links between development attitudes, intentions, and behavior and antecedents like age, self-efficacy, and situational factors as well. They also propose a non-work support variable as predictive of development behavior, though it is positioned differently in their model than in the continuous employee development model. The main differences between their model and the present model, however, are that their model did not contain an explicit feedback loop, instead the amount of prior participation in development was a factor that influenced development self-efficacy, perceived benefits, and development intentions, and their model had a behavioral outcome. In contrast, in the continuous employee development model, as mentioned above, it is the appraisal of development behavior's outcomes that influence future development motivation. This unique feature of the continuous employee development model allows for the consequences of engaging in development activities to affect future development motivation by proposing a cognitive-affective factor, appraisal, as a mediator between past behavior and future development motivation.

In addition to the variables, research, and theory that were drawn from these prior models, which will be further reviewed below, the continuous employee development

model also draws on work from the educational literature, especially on self-directed learning. Research in this area, including work on the effects of supervisor support, availability of learning opportunities, and work or life changes on self-directed learning behavior (Clardy, 2000), as well as work on education-based interventions like teaching goal setting and the obtaining of necessary resources (Candy, 1991), and interventions in organizations like training cognitive skills such as individual needs assessment (Campbell & Kuncel, 2002 ; Long & Morris, 1995), were all useful in forming antecedent factors. For instance, much of the research and theory on the variable career exploration comes from this literature. In addition, many of these authors believe self-directed learning is a function of motivation, defined using a cognitive-expectancy theory, and of (trainable) cognitive skills (Campbell & Kuncel, 2002), which provided additional rationale for the connections in the continuous employee development model.

MODEL PROPOSITIONS AND HYPOTHESES

The motivation proposed to underlie continuous employee development is described by the variables outcome expectations, intentions, and behavior, and the links between them. Because of the central role of these variables in the model, any testing of the model should include these variables. However, a pre-validated scale for outcome expectations had not yet been created. Therefore, the choice of which propositions of the model to test first was based on which would help establish the validity of the inclusion of the variable outcome expectations, as well as the validity of a new outcome expectations scale. Connections and variables in the model were also chosen that would help similarly establish the validity of another new scale and variable, work-related implicit theory.

The explanation of the theory and research behind the connections proposed in the continuous employee development model will therefore start with the three central variables, then the antecedents will be explored and hypotheses stemming from these will be presented.

Expectancies, Intentions, and Behavior

The theory behind these first three variables' placement in the model comes from Ajzen's (1991) Theory of Planned Behavior, Vroom's (1964) Valence, Instrumentality, Expectancy (VIE) theory, and the research from the models mentioned above. Ajzen, and his colleague Fishbein, first proposed that attitude toward a behavior in conjunction with norms for that behavior, predict an individual's intentions (1974). These intentions then

predict behavior (Ajzen, 1991). This set of connections has been extensively tested in the psychological research community (Ajzen, 1991) and was also explicitly tested in the development model of Maurer et al (2003). Therefore, the Theory of Planned Behavior was considered for creating the motivational backbone of the CED model.

However, according to Vroom's VIE theory of motivation, motivation is a function of an individual's perceived expectancy (the relationship between effort and accomplishment), beliefs about instrumentality (the relationship between performance and rewards), and valence (desirability) of the rewards (Vroom, 1964). As several of the prior models mentioned above tested these variables as well, there was an attempt to integrate components of Vroom's theory with Ajzen's (1991). The empirical evidence suggesting the integration of components from these theories for the CED model is reviewed below. Prior research and theory suggested that outcome expectations, as defined below, could capture the concepts important to continuous employee development motivation from Vroom's (1964) VIE theory, and that this variable could substitute for attitude in predicting intentions.

Outcome Expectations

The variables from Vroom's theory have been used in previous models of training and career motivation. For instance, Colquitt, LePine and Noe (2000) theorized that expectancy and valence were key mediators in the relationship between individual characteristics and training motivation. Testing of their model found valence to be a statistically significant mediator. Noe and Wilk (1993) also theorized that employees' beliefs about whether development activity would result in favorable outcomes would

influence their motivation to participate in developmental activities. It was a mediator in their model between personal and work characteristics and development activity.

A term which combines Vroom's notions of expectancy and valence is used by Lent, Brown and Hackett (1994) in their model of career choice. In their model, outcome expectancy is a mediator that shapes career interests and choices both directly and indirectly and is defined as, "personal beliefs about probable response outcomes" (p. 83). Their argument for combining these concepts is that in career decision making, individuals differentially weigh decision consequences based on personal preferences, in other words, estimating expectancy and valence occur simultaneously and help determine an individual's motivation to exert effort.

This argument is also similar to the logic behind the subjective expected utility theory of decision making (Beach, 1997). Subjective expected utility theory holds that individuals use their estimated probability of occurrence of different outcomes as well as the personal utility of these outcomes in deciding between decision alternatives. Using this precedence, the continuous employee development model uses the term outcomes expectations to capture both expectancy and valence, defining the term as personal beliefs about probable outcomes from engaging in development activities. The two are combined for model parsimony and because, logically, an individual's perceived expectancy regarding a given development activity will not affect their attitude or motivation towards that activity independent of their valence for that activity. Outcome expectations is also defined similarly by Fouad and Guillen (2006) and considered an important variable in determining career development decisions.

Note that the present model does not specify that the outcomes expectancies are based on material or externally provided outcomes. Intrinsic outcomes may be just as motivating for some individuals as extrinsic ones (Deci & Ryan, 1985), therefore, outcome expectations can be based on intrinsic or extrinsic outcomes. In fact, intrinsic outcomes may be more motivating in the employee development context, as Maurer et al (2003) found that expectations of intrinsic benefits had stronger links to developmental behaviors than expectations of extrinsic benefits.

Intentions

Outcome expectations have some similarities with attitudes towards development, as both rely on beliefs for their formation. Individuals who believe engaging in development behavior will lead to a desired outcome would also be said to have a positive attitude toward that behavior. Individuals with positive attitudes toward development behaviors would then be expected to form intentions to perform these behaviors, according to the theory of planned behavior (Ajzen & Fishbein, 1974). These intentions are also predicted to influence behavior, as long as the latter two are not too temporally separated and both are at the same level of specificity (Ajzen, 1991). Based on the theoretical similarities between outcome expectations and development attitudes, outcome expectations should also predict development intentions.

Research has largely supported the theory of planned behavior, also finding that the level of specificity that attitudes, intentions and behavior are measured at will dictate the strength of the predictive relations between them (Hulin & Judge, 2003). Basically, the level of specificity should match, with either both of the variables in a predictive

relationship being general or specific. Maurer et al's (2003) finding of a strong positive relationship between specific development intentions and specific development behaviors and a positive but weaker relationship between general attitudes towards development and these specific intentions ($r = .63$ vs. $r = .25$) provides additional support for this theory in the context of employee development.

However, intentions in the continuous employee development model are defined as a willingness to expend resources based on current knowledge and availability, thus also incorporating research on the influence of external constraints (Lent, Brown, & Hackett, 1994; Lans, Wesselink, Beimans & Mulder, 2004). This makes the connection between outcome expectations and intentions consistent with the Naylor, Pritchard, and Ilgen (1980) theory of motivation where an individual is motivated to the extent that they believe that varying the time and effort they devote to action will result in different levels of need satisfaction. Thus, intentions are also based on anticipated need satisfaction, a notion that suggests an important moderating factor of the relationship between outcome expectations and intentions.

Personal Non-Work Environment

The first moderator of the motivation process in the model of continuous employee development behavior is personal non-work environment. Since the 1980's, career development theories have begun to integrate non-work influences into their research (Sterns & Huyck, 2001). For example, Hall and Mirvis (1995) argued that work and non-work roles have an increasingly blurry distinction between them and Lent, Brown, and Hackett (1994) found that positive or negative changes in an individuals' life

were related to changes in development behavior. The Naylor, Pritchard, and Ilgen (1980) theory of motivation is also consistent with the notion that the decision to engage in ongoing developmental activities is a decision to allocate limited personal resources. Pritchard and Ramstad (2003) refer to these finite resources as an individual's "energy pool".

Thus, in the continuous employee development model, an employee's personal non-work environment is proposed to influence whether outcome expectancies regarding development activities will lead to stated intentions. This moderating effect may be strongest where individuals' environment outside of their work would hinder their engaging in additional development activities. Too many non-work demands on an individual's time or mental/emotional resources will reduce the amount of effort they can put into employee development. However, positive life events like promotions, children becoming financial independent, or the availability of a spouse at home to assist with household chores can also increase the personal resources an individual can devote to their career development.

An individual's resources, or energy pool, should also influence how involved and time consuming, in general, an individual's intended developmental activities will be. Therefore, this variable will also influence the choice of development activity. Though outcome expectations explain how an individual feels about different activities, the influence of their personal non-work environment will dictate which activities they could realistically express intention towards.

Development Behavior

Both the theory of planned behavior, with its limitation that attitudes, intentions, and behaviors must be specific enough for proposed relations between them to be observed, and the Naylor, Pritchard, and Ilgen (1980) theory of motivation with its emphasis on needs satisfaction as a motivator, suggest a positive relationship between developmental intentions and developmental behavior. In addition, Maurer et al (2004) recently demonstrated a strong positive relationship between development intentions and development behavior ($r = .57$).

Yet the relationship between what an individual intends to do and how they actually behave can be complex. For instance, factors such as availability of desired learning activity in the workplace and/or work time and support to engage in this development will likely moderate the relationship between intentions and behavior. This means that some of the antecedents in the present model like organizational environment for learning would likely moderate this relationship. Any unforeseen changes from financial to personal could also intervene to prevent stated intentions from resulting in behavior. Therefore, specific moderators of the relationship between intention to engage in development and actual development behaviors are not proposed because a comprehensive list would be burdensome and uninformative. Also noteworthy, but not explicitly represented in the model, are the fact that different types of employee development behavior exist and the different factors that can influence the choice of development behavior. These are discussed below.

Types of development behavior.

Different kinds of employee development behaviors have been identified by different authors, though three general categories can be discerned from these (Noe, Wilk, Mullen & Wanek, 1997; Lans et al., 2004). Individuals can engage in formal job training, informal job training, and other-job related learning. Formal job training includes any structured learning activities directly pertaining to learning current-job related skills including corporate sponsored or private institutional classroom training or structured on-the-job training programs. It could also include the collection and provision of feedback from others on job performance. Informal job training can include mentorships, job rotation or enlargement, seeking challenging job assignments, or joining professional societies. That is, any unstructured learning opportunity that promotes new knowledge and skills pertaining to one's present position. Other-job related learning could be more or less formal, for example classroom learning to help start a new career path, or enhance one's leadership and speaking skills, or it could involve learning a new language through self-study at home. Even employment-related discussions with co-workers and development-related surfing on the internet would qualify.

Any and all of these activities relate to employee development in that they improve the knowledge, skills, and adaptability of the employee. The individual engaged in any of these activities increases their value to organization(s) and their marketability more than an individual who does not. Obviously, different learning choices will be more or less strategically sound decisions for improving individuals' marketability. This has resulted in some researchers' calls for training in self-diagnosis and training evaluative skills (Long & Morris, 1995), but the only important distinction in terms of whether an

activity qualifies as a employee developmental activity is whether that activity can or can not benefit the individual as a present and future employee. As such, Lamaze breathing classes would be excluded for most non-medical occupations, but fitness or sports involvement may not be if they make the individual a more productive worker or increase their work contacts. Thus, despite this model restricting its focus to development behaviors that affect the individual in their role as an employee, this still encompasses a broad range of development activities. This range of activities is not expressly stated in the model because there are no specific predictions made regarding the different categories of development.

Factors influencing the choice of development behavior.

Although no specific predictions are made regarding the different development behavior choices an individual may have, it is predicted that this choice can be influenced by all of the continuous employee development model's antecedents; stable factors, malleable characteristics, and organizational/economic environment. Thus, which specific behaviors an individual will generate outcome expectations regarding, subsequent intentions toward, and eventually engage in, are influenced by all of these factors. These variables are discussed in greater detail in subsequent sections, but the influences they may have on the choice of development behavior are briefly outlined here.

Most theories of career development state that individuals have different priorities at different ages or stages and so both may influence individuals' choices regarding development activities (Burack, 1984). For example, individuals perceiving themselves to

be in a later career stage may choose learning activities of shorter duration or involving less intense time commitments. Numerous studies have linked high self-efficacy to the setting of specific challenging goals (cf. Lent, Brown & Hackett, 1994; Phillips & Gully, 1997), therefore self-efficacy can likewise affect development activity choice. Further, since Dweck (1986) hypothesized that individuals with a learning or mastery goal orientation will make greater efforts during the learning process and both learning orientation and implicit theory are linked to higher intrinsic motivation to engage in learning activities (Dweck, 2000), both of these variables may predict the choice of more time intensive or difficult development behaviors. For similar reasons, work centrality should have the same effects. These variables will all be defined in the following section.

A positive organizational environment for employee development, for example, encouraging training classes or investigating new techniques or skills while on the job may affect whether development activities are likely to occur regarding the current job or in the current organization. For instance, Tannenbaum (1997) noted the important role played by supervisors in creating learning opportunities from everyday activities and encouraging a learning atmosphere for formal and informal learning. Conversely, the availability of development options will also necessarily limit individuals' choices. Lack of formal training programs provide obvious limits but lack of support for mentoring relationships and poor knowledge management systems can also constrain learning choices (Tannenbaum, 1997). Career exploration can also affect the choice of development behavior because this choice will be influenced not only by available development options but also by perceived needs for development.

Hypotheses

In order to test the entire model of continuous employee development behavior, valid scales for all variables are needed, as mentioned above. Other barriers include the prohibitive sample size that would be needed given the number of variables in the model. For these reasons and others mentioned above pertaining to the validation of new scales, only a portion of the model will be tested in this first study of the CED model. This testing of the model involves the variables outcome expectations, intentions, development behavior, and some of their antecedents.

The incremental validity of including outcome expectations in models involving employee development behavior was explained above. Namely, it combined Vroom's concepts of expectancy and valence with attitudes from the theory of planned behavior, in contrast with prior models of employee development, which had separated these concepts. For instance, Maurer et al (2003) used both development attitudes and perceived benefits as separate variables. Their scale of development attitudes captured valence regarding development activities, but not expectations, which was measured with the perceived benefits scales. Therefore, in order to test the incremental validity of outcome expectations, hypotheses involving outcome expectations are tested, but hypotheses involving development attitudes, a variable not in the CED model but used by Maurer et al (2003), are tested as well.

The model of continuous employee development behavior proposes that outcome expectations are predicted by the model's antecedents and that this variable, in turn, predicts intentions to develop. In addition, the model, predicts that the relations between outcome expectations and intentions to develop should be stronger than the relationship

between outcome expectations and development behavior. The propositions regarding the model's antecedents will be presented in the section on antecedents below.

Hypothesis 1: Outcome expectations will have a significant positive relationship with intentions to develop.

Hypothesis 2: The relationship between outcome expectations and intentions will be stronger than the relationship between outcome expectations and development behavior.

Hypothesis 3: The relationship between outcome expectations and intentions to develop will be stronger than the relationship between attitude towards development and intentions.

Hypothesis 4a: Comparison testing of two models, which are different only in whether they contain outcome expectations or development attitude, will yield better structural equation modeling fit indices for the model containing outcome expectations.

This hypothesis assumes that one or the other belongs in a model predicting employee development behavior. However, it more likely true that both variables contribute some variance to the prediction of development behavior. Therefore, a more accurate test of the validity of outcome expectations in the CED model is a test of its incremental validity. Hypothesis 4b compares models containing both variables but differing in whether outcome expectations is connected to other variables in the model, thereby testing its ability to predict unique variance.

Hypothesis 4b: Comparison testing of two models containing both outcome expectations and development attitude, but differing in whether outcome expectations has any connecting paths to other variables in the model, will yield better structural equation modeling fit indices for the model containing these connecting paths.

The remaining hypotheses involve the antecedents of these central motivational factors in the CED model.

Antecedents

Stable Factors

Stable factors are variables that can and do vary for individuals but are not subject to direct manipulation. Both age and career stage are proposed as stable factor antecedents, though neither may have a simple linear relationship with outcome expectations. For example, although some researchers have found a negative relationship between age and motivation to learn (Colquitt et al, 2000), other authors have argued that many factors can complicate this relationship. They claim that the formats and methodologies of traditional training programs and research studies produced results that were biased against older workers in terms of their ability to learn (Sterns & Doverspike, 1989).

As a specific example, Fossum, Arvey, Paradise, and Robbins (1986) argued that management is biased in its selection of individuals to send to training programs and biased in its treatment of older workers in general thus creating an atmosphere that erodes the self-efficacy of older workers. Hall and Mirvis (1995) also argue that stereotypes about older workers as inflexible and too expensive exist. They further note that the contributions of older workers are often unrecognized and therefore unrewarded. Maurer (2001) proposes that older workers' personal experience with these biases and stereotypes, and vicarious experiences of watching the treatment of other older workers,

not only affects their self-efficacy but also affects their motivation to engage in development activities. In terms of the continuous employee development model, this means that individuals of different ages could have different outcome expectancies, even in the same company, for engaging in development activities. Similarly, individuals of the same ages but from companies that differed in their attitudes towards older workers could also have different outcome expectations. On the plus side for older workers, some authors have posited strong arguments for older workers as an untapped resource of unrecognized skills (Hall & Mirvis, 1995).

However, this discussion of attitudes regarding older workers ignores other important factors that likely complicate the relationship between age and the motivation to engage in development behaviors. Not only can any major changes in an individual's life, personally (ex., marriage or children) or professionally (ex., being laid off, getting a promotion, or being part of a corporate merger), result in a rapid shift in career stage, at any age (Lent, Brown & Hackett, 1994), but the above mentioned changes in job stability, or in the psychological contract between employers and employees, have altered the expectations that many workers can make about remaining in a single job or even single career path for life (Burack, 1984; Hall & Mirvis, 1995). Thus, the relationship between age and motivation to learn is further complicated by the fact that it is increasingly the case that age and career stage are not necessarily linearly related (Van Esbroeck, Tibos, & Zaman, 2005). In addition, if older and younger workers react differently to being at the same career stages (Allen & Meyer, 1993), for instance, taking an entry level position with a new company, then age and career stage may actually interact in their relationship with motivation to engage in development activities, with

older individuals engaging in more development activities than younger, as suggested by the findings of Neisser (2005). She found that older unemployed workers were less affected by negative work experiences or dependent on social support, in terms of their tendency to engage in continuous learning, than younger workers. In the current model possible reasons for this could include the greater personal resources or career exploration skills that older individuals may have.

Therefore, the continuous employee development model proposes that both age and career stage are non-redundant variables influencing employees' outcome expectations. Career stage could be measured based on tenure in a single job position or within a company somewhat analogous to Katz's (1980) career development stages of socialization, innovation, and adaptation. Based on current career stage literature, though, it should generally capture whether someone sees themselves as progressing laterally or vertically, and either up or down. This conceptualization of career stage should also capture the important variance in what Maurer et al (2003) argued was the distinction between actual and perceived relative age. In this case, though, it would reflect individuals' perceived career stage; whether one sees themselves as beginning a new career path or simply maintaining their current skills. These individuals may have different but not necessarily higher or lower outcome expectations. For instance, an employee beginning a new career path would have different expectations of reward for engaging in development relative to a more established worker for whom reward for development may simply be the retention of their job. This argument is similar to the call for a more dynamic, non-linear model of career choice by Van Esbroeck, Tibos, and Zaman (2005).

Malleable Characteristics

Individual differences variables in the continuous employee development model include occupational self-efficacy, learning goal orientation, implicit theory, work centrality, and career exploration. The research and theory explaining their proposed linkages in the model are outlined in the sections below.

In contrast to the stable factors, these variables may be more subject to manipulation. Although self-efficacy, implicit personality, and learning orientation are often conceptualized as trait-like, other research shows they have cross-situational variance and display more consistency when they are measured specific to a given task or setting (Button, Mathieu & Zajac, 1996; Kanfer, 1990; Maurer, 2001). Hence Vandewalle (1997) and Schyns and Von Collani (2002) have created versions of learning orientation and self-efficacy scales respectively that are specifically adapted to the work context. No validated work-adapted scale exists yet for implicit theory, although Dweck's (1999) provisions of scales for measuring different kinds of implicit theories (e.g., for intelligence, personality) and findings of differential predictions of her scales in different contexts and with different populations (Vandewalle, 1995) suggest this would be a useful endeavor. Therefore, hypotheses to test a new scale of work-related implicit theory will be presented below. All of these variables are argued to be at least somewhat malleable, including work centrality and career exploration. The latter, as will be described below, is a skill as well as a characteristic.

Self-efficacy.

Self-efficacy, or the beliefs in one's own skills and competencies (Bandura, 1997), is one of the most investigated concepts in the career and training motivation literature. It has been defined as the belief that one can successfully accomplish a specific task (Bandura, 1977), as well as the belief in one's competence or capabilities in general (Chen, Gully, & Eden, 2001). It is seen as an important factor in the motivation to learn (Phillips & Gully, 1997; Maurer et al, 2003; Colquitt & Simmering, 1998) and engage in career development activities (Lent, Brown & Hackett, 1994; Noe & Wilk, 1993), though it has appeared as an antecedent in some models (Noe & Wilk, 1993) and a mediator in others (Colquitt, LePine & Noe, 2000; Phillips & Gully, 1997). These differences may be due to which of the previous two definitions of self-efficacy authors are using to operationalize it, that is, at what level of specificity they are measuring. Given the differences in findings that are seen when self-efficacy is measured at a general versus a more context specific level (Lent, Brown & Hackett, 1994; Maurer, 2001), it is not surprising that Noe and Wilk (1993), who measured it at a general level, and Phillips and Gully (1997), who measured it pertaining to a specific academic task, found differences in its predictive relations.

In the continuous employee development model it is positioned as an antecedent because beliefs about personal competency, specifically at work, are a necessary precondition of outcome expectations. These variables are not synonymous, though, either theoretically or operationally. Work-related self-efficacy asks questions regarding one's belief in their ability to accomplish things at work, whereas a scale of outcome expectations would ask questions regarding whether one believed personally valued

positive results would come from engaging in specific development activities. Therefore, self-efficacy is necessary for positive outcome expectations, but it is not the same variable, at least as defined in the continuous employee development model. Lent, Brown and Hackett (1994) also made similar arguments for self-efficacy and expectancy. As well, it is acknowledged that self-efficacy also has antecedents, like previous work experiences, which contribute to its malleability.

Given that general self-efficacy has been found to have poorer predictive relations with more specific behaviors and attitudes than context-specific self-efficacy (Chen, Gully & Eden, 2001), though, the relations between self-efficacy and outcome expectations for engaging in development behaviors should be strongest when self-efficacy is operationalized at a context-specific level. Thus, a scale of self-efficacy like the occupational self-efficacy scale of Schyns and Van Collani (2002), adapted specifically to the work context, should be ideal for testing the relationship proposed in the model.

Learning orientation.

The concept of goal orientation emerged from Carol Dweck's (1986) investigation of children's learning styles. Traditionally defined, goal orientation is a unidimensional variable. Those with a learning or mastery goal orientation see their skills as malleable and desire to increase their competence, and those with a performance goal orientation do not see their skills as malleable and value demonstrating good performance above actual learning.

In the training and development literature, it has generally been found that learning orientation is positively related, and performance orientation is negatively related, to motivation to learn (Colquitt & Simmering, 1998; Phillips & Gully, 1997). Using an academic task, Phillips and Gully (1997) found learning orientation was positively and performance orientation negatively related to learning motivation, and the same relations were found between learning orientation and motivation to learn training materials by Colquitt and Simmering (1998). Other results in line with these findings include those of Maurer and Lippstreu (2004) that learning goal orientation was predictive of individual's beliefs regarding their "improvability", and those of Heslin, Latham, and VandeWalle (2004) who found individuals with experimentally induced learning goal orientations displayed behavior consistent with the belief that poor employee performance was changeable. The relationship between learning goal orientation and "improvability" or implicit theory is discussed further in the following section but these findings also suggest that learning orientation is not fixed. In the continuous employee development model, learning goal orientation is predicted to have a positive influence on outcome expectations. Individuals with a high learning orientation will be motivated to engage in development activities and will view more rewards, for instance, intrinsic ones like personal development, as valent.

Newer conceptualizations of goal orientation have addressed methodological and conceptual criticisms of the concept (c.f., Kraiger, Ford, and Salas, 1993) and are important considerations for operationalization of the variable in testing the model. Button, Mathieu, and Zajac (1996) demonstrated that learning and performance orientations were not the two poles of a unidimensional scale, they could be

conceptualized as independent dimensions. That is, an individual could be high on both learning and performance goal orientation, low on both, or any other combination. Further, both VandeWalle (1997) and Elliot and Harackiewicz (1996) partitioned the performance dimension into two additional independent dimensions, prove and avoid, thus creating three independent dimensions. VandeWalle (1997) also adapted goal orientation scales for adult work settings to address the criticism that most early work was done on non-adult populations (Kraiger, Ford, & Salas, 1993). Due to its appropriate level of specificity, VandeWalle's (1997) adapted scales are also proposed as ideal measures to capture the relationship between learning goal orientation and outcome expectations proposed in the model.

Implicit theory.

An individual's self-theory or implicit theory is their belief about whether the personal attributes of themselves and others are malleable or fixed (Dweck, 2000). It is a two dimensional construct with individuals characterized as either entity theorists or incremental theorists. Entity theorists believe that individuals' characteristics, especially intelligence, are fixed entities within a person that cannot be changed. Incremental theorists believe that these characteristics are malleable; intelligence can be increased through learning. These differences are seen as having far reaching consequences on individuals' cognitions and actions, from the attributions made of failure at a task to future task and goal preferences (Dweck, 2000; Hong, Chiu, Dweck, Lin & Wan, 1999).

Dweck (2000), studying children and learning tasks, found that entity theorists believe that failure at a task reflects lack of ability on their part whereas incrementalists

believe failure reflects a lack of effort. Based on her research, she argued that entity theorists are likely to adopt performance goal orientations, preferring to perform only those tasks where they can demonstrate ability, and incrementalists are likely to adopt mastery or learning goal orientations, viewing failure or setbacks as an opportunity to learn more. Dweck (2000) has also argued that when measured with a forced choice between learning and performance goals, goal orientations are clearly linked to implicit theory.

Two problems exist with her arguments, though. First, she is treating goal orientation as a two dimensional construct, whereas Button et al. (1996), Vandewalle (1997) and Elliot and Harackiewicz (1996) found it was not. Therefore any results obtained from forcing individuals to choose between two poles are questionable. Second, Kanfer (1990) and Vandewalle (1995) have argued that the relations between goal orientation and implicit theory are not the same for adults and children. Kanfer (1990) argued that adults had a more differentiated understanding than children and Vandewalle (1995) argued that the goal setting behavior of adults is influenced by a greater number of variables, especially in socially complex contexts, than that of children. Vandewalle (1995) also found that the link between goal orientation and intrinsic theory in adults was not strong. Therefore, although the concepts are conceptually related and it is likely that an individual's implicit theory, or belief in the malleability of characteristics, will affect their goal orientation, the two are proposed as non-redundant variables in the continuous employee development model. To date, little research has assessed the relationship between development motivation or behavior and implicit theory but a fruitful future

research project would be a test of the incremental validity of implicit theory over learning goal orientation in predicting employee development tendencies or behavior.

A link between implicit theory and development motivation is suggested by the work of Dweck (2000). Implicit theory has been found to determine children's choices of learning goals or tasks, with incremental theorists choosing challenging tasks that they can learn from and entity theorists choosing tasks they know they can succeed at when given such a choice. Thus, incremental theorists have a stronger tendency or motivation to learn and it can be theorized that this would translate to more positive outcome expectations for engaging in learning activities.

Research indirectly linking implicit theory to development motivation includes studies using locus of control. Locus of control is a conceptually similar variable to implicit theory that has been linked to motivation to learn (Colquitt, Le Pine & Noe, 2000). Locus of control (LOC) or, as originally conceived by Rotter (1966), internal versus external control of reinforcement, measures the extent to which individuals believe that outcomes of their behavior are due to their own actions (internals) or are due to the actions of others, or luck or fate (externals). Whether an individual is an internal or an external describes the extent to which they believe that events occurring around them are under their control (Rotter, 1973). Internal locus of control can be seen as conceptually similar to incremental theory in that both deal with whether an individual feels they have control, either over themselves or over their world, and a similar argument could be made for external locus of control and entity theory. Implicit theory is chosen over locus of control for inclusion in the CED model, though, because of the greater specificity of implicit theory. Feelings of control over one's environment and the outcomes they

experience will likely have some effect on their tendencies to engage in development, but whether one feels they can change their basic knowledge or intelligence level should be a much stronger predictor of whether they will engage in attempts to change it. This should especially be the case when the questions about intelligence or knowledge are written to specifically address the work context.

Given findings suggesting learning goal orientation and self-efficacy are not fixed traits, implicit theory may also be a state-dependent variable and may show the strongest relations to outcome expectations when measured at a greater level of specificity, for example, regarding the work environment. However, an adapted implicit theory scale has not yet been validated for the work context.

Work centrality.

Paullay, Alliger, and Stone-Romero (1994) argue that researchers have collapsed two different but related terms dealing with the importance of work in an individual's life, specifically, job involvement and work centrality, though they write primarily about the former. Work centrality is the degree of importance that work plays in one's life and job involvement is the degree to which one is cognitively pre-occupied, engaged, or concerned with one's present job (Paullay et al., 1994). Support for their statements can be found in Maurer and Tarulli's (1994) definition of job involvement, which contains elements of the definitions of both job involvement and work centrality. Both of these variables have been associated with development motivation, as Maurer and Tarulli (1994) found their measure of 'job involvement' predicted participation in voluntary employee development activities, and similar findings were reported by Colquitt et al.

(2000) in their meta-analysis of training motivation. These variables should play a role in the motivation of employees to engage in continuous employee development as well because the more important work is to an individual, the more they will be interested in engaging in activities that involve their work and the more they will value work-related outcomes. This is synonymous with saying that individuals with high work centrality will be more likely to set career goals and display commitment to career development. Work centrality was chosen for the present model, though, because it will be less confounded with how an individual feels about their present job and more a pure measure of their attitude towards their career/employment in general. This variable is classified as a malleable characteristic because other influences, like prior work experiences or organizational environment, may affect its strength.

Career exploration.

Career exploration has been alternately defined as the behavioral processes involved in searching for career-related information, the cognitive processes involved in this search or other career-related problem solving, or as a temporary life stage in adolescence or young adulthood where important career decisions are made (Rodriguez-Moreno, 2003). The way it is conceptualized by Strumpf, Colarelli, and Hartman (1983), though, as a variable with cognitive and behavioral dimensions, may make it one of the most important variables influencing continuous employee development behavior. They include measurement of an individual's self-assessment of career strengths and weaknesses (cognitive), the ability to see when personal development is needed (cognitive), and the tendency to search for self-and environment- related information

(behavior). Their scale also measures skills that are necessary for adaptation of an individual's career plans and goals to their environment (Strumpf, Colarelli & Hartman, 1983).

Logically, an individual able to perceive when responses to change are called for and investigate what those responses may need to be should be more likely to engage in employee development. Further, by definition, career exploration should make developmental outcomes more valent and thus generate higher intrinsic motivation to develop and lead to positive outcome expectations. These arguments are also consistent with Sterns and Lax's (2004) statements on the need for self-knowledge and broader occupational knowledge for successful career self-management.

Although much of the research involving this variable has studied adolescents and young adults (Rodriguez-Moreno, 2003), some research on adult workers that supports these predictions exists. Maurer and Tarulli (1994) used an abbreviated measure of career exploration, including items measuring career insight and perceived need for self-improvement, and found it was related to engaging in voluntary development activities in non-management employees (Maurer & Tarulli, 1994). The findings of Noe and Wilk (1993) on the relations between perceptions of development needs and employee's participation in development activities are also supportive, though they were not significant across all occupations examined. Related findings also include Colquitt, LePine and Noe's (2000) meta-analysis of training motivation that found that career exploration predicted motivation to learn in some studies, though not in enough studies to include the variable in their analyses.

Differences in the variables used to study career exploration may explain some of these equivocal findings, however. If career exploration is the ability to perceive an individual's own needs for development but the motivation being measured is for specific development activities, which may or may not be what the individual needs, the relationship between them may be attenuated. In this vein, Noe and Wilk (1993) studied attitudes and behavior towards company-sponsored formal courses and seminars but noted that employees' disagreements with the company on development needs would likely negatively affect development behaviors. In contrast, the meta-analysis by Colquitt and his colleagues (2000) looked at motivation to learn specified training materials but did not mention whether these were activities that the employees themselves believed were in their developmental interest. Thus, their non-significant findings regarding this variable may underestimate its importance in models of employee development behavior. When measured using congruent cognitive and behavioral dimensions it should be a factor in employees' development motivation.

Organizational and Economic Environment

Katz and Kahn (1966) argued that problems were best understood when examined in the social environment from which they arose. This argument, research from training and career development researchers (Colquitt, et al., 2000; Noe & Wilk, 1993), and Tannenbaum's (1997) work on work environments, suggest that employees' organizational and larger economic environments should be a factor influencing their motivation to engage in development behaviors.

Organizational environment.

Prior authors have acknowledged the importance of the organizational environment on employee's development attitudes and behavior (Maurer & Tarulli, 1994; Noe & Wilk, 1993; Tannenbaum, 1997). This environment can be measured in terms of social support, like what may come from a supervisor, peers, or the general organizational climate, or it can be measured in terms of physical support, like development benefits, opportunities for in-house training, or availability of learning materials. In addition, the environment can also be measured for specific components which may contain elements of both social and physical support, for example, the organizational climate for learning.

Organizational climate for learning was defined by Maurer and Tarulli (1994) as a general orientation by a company towards employee learning and development. Perceptions of this climate by employees formed from explicit company policies or the company's general orientation were found to predict interest and intention to participate in future development activities in their study. Noe and Wilk (1993) also found that perceptions of organizational climate and supervisor support for learning affected interest and participation in development activities. Supervisor support for learning was also investigated by Maurer and Tarulli (1994) though they found it only had an effect if this support was considered valuable by the employees. They also found racial differences in these valuations, with Blacks placing less value than Whites on supervisor support. Findings on the effects of peer support on development activity have been mixed (Maurer & Tarulli, 1994). Tannenbaum's (1997) scale measuring an organization's environment for continuous learning also found that presence, absence, or type of feedback may be an

important determinant in future development motivation. Similar findings were reported by Colquitt, LePine and Noe (2000) in their meta-analysis of training motivation.

In the model of continuous employee development, this variable is proposed to have direct effects on both work-related personal characteristics and outcome expectations. It can affect work centrality, especially if it is very unsupportive, because it is possible for an individual who is discouraged enough from growth in their job to redirect their energies to other avenues like their family, church, or sports involvement. Career exploration could be affected by both physical and social support in an organization as both the availability of resources and positive encouragement could increase an individual's knowledge or ability to self-assess.

Work-related self-efficacy, learning orientation, and implicit theory can also be affected because the organizational environment for development, especially supervisor and peer support, will provide positive and negative messages to individuals, which can affect their self-perceptions and other attitudes that influence these variables. If an IT manager repeatedly tells their employees they are all capable of improving their computer skills and encourages all displays of new knowledge gained, regardless of whether it is used correctly or not, they can boost work-related self-esteem and encourage a mastery or learning orientation to computer-related learning. They are also encouraging individuals to adopt an incremental implicit theory regarding their work skills. Examples of its direct effects on outcome expectations include when perceived organizational barriers or aids and reward structures affect the perceived relationship between employee's development efforts and desired rewards for accomplishment.

Economic environment.

Changes in the economic environment, as noted above, have affected companies' policies and behaviors towards the retention and therefore responsibility for training and developing their employees. One result of this, mentioned above, has been a dissolution of the traditional psychological contract between organizations and their employees and the self-training and development that organizations are increasingly expecting from their employees (Hall & Mirvis, 1995). Likewise, further changes in the economic environment, especially declines in local or global markets, can also affect employees' expected outcomes for engaging in developmental activities as this environment also helps determine the rewards that individuals will experience, directly and vicariously, for engaging in different work related development activities. Therefore, the economic environment can have a direct effect on outcome expectations.

These experienced rewards could also affect employee's work-related personal characteristics, like self-efficacy and learning orientation. The latter will be especially affected if unsure outcomes are involved, that is, if greater risks may accompany engaging in the development activity. For instance, individuals would be more likely to demonstrate a prove goal orientation than a learning goal orientation if upcoming layoffs were being based on demonstrated performance (VandeWalle, 1997). Self-efficacy could be affected if the economic environment is perceived as so depressed that an individual fears for their job security or is forced to take a pay cut or a lower paying job and experiences a concomitant drop in their perceived job-related abilities (Schyns & von Collani, 2002). However, implicit beliefs are less likely to be affected by the economic

environment, as a positive or negative job market will not directly affect an individual's belief in their ability to change a given skill (Dweck, 2000).

Work centrality could be affected by a positive or a negative economic environment as labor shortages could cause some employees to feel more secure in their jobs and therefore less driven to focus on future career development (Paullay, Alliger, & Stone-Romero, 1994). Alternately, high demand for jobs and/or widespread layoffs could boost work centrality. A positive or negative economic environment could also affect career exploration skills for similar reasons, employees could be more or less driven to self-assess their career skills based on job demand and supply (Tannenbaum, 1997). Likewise, other external economic changes brought about by greater automatization, need for computer skills, or new areas of rapid job growth could cause shifts in employees' priorities (work centrality) or cause them to work on increasing their career exploration skills/activities (Strumpf, Callarelli, & Hartman, 1983).

It should also be noted, though, that interactive effects could exist between antecedents which would affect the effects that the economic environment would have on outcome expectancy. For instance, an employee with an entity implicit theory would react to an economic downturn differently than an employee with more of an incremental implicit theory. Both would value developmental improvements in their work skills but they would differ in their beliefs about whether they could make the necessary changes (expectancy), therefore they would have different outcome expectations and would react differently to the same economic changes (Dweck, 2000).

Previous Developmental Work Experiences

In a working employee, their work-related self-efficacy, learning orientation, and implicit theory, and work centrality and career exploration will also have been formed on the basis of prior developmental experiences at work, based on the definitions of these variables (Dweck, 2000; Paullay, Alliger, & Stone-Romero, 1994; Strumpf, Callarelli, & Hartman, 1983; Schyns & von Collani, 2002; VandeWalle, 1997). Both direct and vicarious experiences of rewards and punishments encountered for engaging in prior development activities will have been formative influences in an employee's work-related characteristics. For example, prior work successes, or perceived success at engaging in development, will boost an individual's work-related self-efficacy (Schyns & von Collani, 2002), whether an individual receives valent rewards from their prior work experiences is likely to affect their work centrality (Paullay, Alliger, & Stone-Romero, 1994), and prior work experiences, especially developmental ones, will help in the formation of greater career exploration ability (Strumpf, Callarelli, & Hartman, 1983). Whether an individual develops a work-related learning, prove, or avoid goal orientation can be dependent on how they have been rewarded in prior work situations (VandeWalle, 1997). For example, whether they were given valent rewards for engaging in learning or development activities, irregardless of immediate performance-based outcomes, or if they were only rewarded for changes in performance. Implicit beliefs will also be formed based on prior work experiences, especially developmental ones, because experiencing success or failure in changing one's work-related KSA's will affect the extent to which an individual could be classified as having an incremental or entity work-related implicit theory (Dweck, 2000).

This variable therefore encompasses more than simply the amount of prior work experience, it also includes the perception of whether development activity resulted in valent rewards, because it is influenced by the variable appraisal, which is described further below. This explains how it is theorized to affect the different work-related personal characteristics and may explain why Maurer et al (2003), who measured only *amount* of prior participation, found it predicted future intentions well ($r = .59$), that is, those who have engaged in prior development are more likely to express intentions to engage in future development, but developmental self-efficacy and perceived benefits were predicted less well ($r = .13$, $r = .07$). This model proposes that an additional variable, perception, or appraisal, mediates this feedback loop.

Hypotheses Involving Antecedents

As mentioned above, variables were chosen for inclusion in the present study that would help validate the scale developed for outcome expectations and to help examine the incremental validity of this variables inclusion as well as that of work-related implicit theory. Therefore, not all antecedent variables were included in the hypotheses for this initial testing and other non-model variables were included for contrasts.

Hypothesis 5: Occupational self-efficacy will have a significant positive relationship with outcome expectations.

Hypothesis 6: Work-related implicit theory will have will have a significant positive relationship with outcome expectations. Incremental implicit theory will lead to greater outcome expectations than entity implicit theory.

Hypothesis 7: Work domain learning goal orientation will have a significant positive relationship with outcome expectations.

The next four hypotheses are for validating the work-related implicit theory scale in the CED model. First the validity of the work-related implicit theory scale will be tested via a contrast with general-level implicit theory.

Hypothesis 8: The relationship between work-related implicit theory and outcome expectations will be stronger than the relationship between (general-level) implicit theory and outcome expectations.

To test the incremental validity of including the variable implicit theory in the CED model, its relationship with outcome expectations will be contrasted with two other variables and alternate models will be compared. First, as mentioned above, implicit theory should predict unique variance in outcome expectations over and above that explained by learning goal orientation. Second, work-related implicit theory should show significantly better predictive relations with outcome expectations than work locus of control, a conceptually similar but less specific variable. Locus of control measures whether individuals believe the outcomes of their behavior are under their control (Rotter, 1966; Rotter, 1989) whereas implicit theory measures whether individuals believe their intelligence level is under their control, or malleable (Dweck, 2002). Work level scales of these constructs should also demonstrate these differences or differential relations. Therefore, a conservative but more consistent test of this proposition, given the use of context specific scales for other variables, would involve work-related implicit theory and work-related locus of control. Pre-validated scales do exist for this latter

variable. Finally, another method of testing these contrasting propositions is to test alternative models using structural equation modeling.

Hypothesis 9: Work-related implicit theory accounts for variance in outcome expectations even when work domain learning goal orientation is already in the regression equation.

Hypothesis 10: The positive relationship between work-related implicit theory and outcome expectations will be significantly greater than the relationship between work-related locus of control and outcome expectations.

Hypothesis 11: Comparison testing of two models, which are different only in whether they contain work-related implicit theory or work locus of control, will yield better structural equation modeling fit indices for the model with work-related implicit theory.

The above hypothesis only examines differences when work-related implicit theory *or* work locus of control are in the model. As both variables may contribute some variance to factors in the model, a better test of the incremental validity of work-related implicit theory would involve examination of models containing both variables. The following hypothesis also tests whether locus of control belongs in a model already containing implicit theory.

Hypothesis 12: Comparison testing of models containing both work locus of control and work-related implicit theory but differing in whether work locus of control has any connections to other variables in the model will yield better structural equation modeling fit indices for the model without such paths.

These antecedents should also show better predictive relations with outcome expectations than with the most conceptually similar scale used in prior similar models,

Maurer's attitude scale, as described above. That is, according to the model of continuous employee development, the antecedents of the model should predict outcome expectations better than a variable that contains expectancy or valence concepts, but not both.

Hypothesis 13: The relationship between occupational self-efficacy and outcome expectations will be greater than the relationship between occupational self-efficacy and Maurer's attitudes scale.

Hypothesis 14: The relationship between work-related implicit theory and outcome expectations will be greater than the relationship between work-related implicit theory and Maurer's attitudes scale.

Hypothesis 15: The relationship between work domain learning goal orientation and outcome expectations will be greater than the relationship between work-related learning goal orientation and Maurer's attitudes scale.

The final variable in the continuous employee development model is appraisal. This variable is another unique contribution of this model to the literature.

Appraisal of Outcomes by Self/Other

In most training and career development models, the variable at the end of the model, or the outcome the model is attempting to explain/predict, is a measure of learning and/or performance (cf. Colquitt, LePine & Noe, 2000). Learning or performance may also affect future motivation to develop, especially through variables like self-efficacy, because individuals who succeed may be more likely to try again (Bandura, 1997). However, these effects are also likely to be mediated by one's appraisal of their success.

If this statement is true, then actual learning and performance would not be as important in determining future development motivation as how individuals feel, and believe others whose opinions are important to them feel, about the outcomes of their development activities (McCombs, 1991). These feelings and beliefs are the basis for the variable appraisal of outcomes by self-other (hereafter referred to as appraisal) in the CED model.

As used in the CED model, appraisal is like the concept of motivation, in that both have cognitive and affective components. Appraisal integrates cognitive factors into the continuous employee development model by arguing that the interpretation of outcomes of engaging in prior behaviors is more influential than simply the occurrence of prior development on future motivation. This variable also integrates affective factors as appraisal or evaluation of an intrinsic or extrinsic outcome will have an emotional component too. For example, attaining a goal can increase that goal's valence for an individual (Locke, Frederick, Buckner, & Bobko, 1984). Thus, appraisal that is made of a development outcome can affect future valence (affective) and future expectancy (cognitive), and therefore affect future outcome expectations.

Appraisal is therefore defined in the continuous employee development model as a cognitive and affective evaluation, using perceived outcomes and resulting in a generally positive or negative evaluation of their efforts. These perceived outcomes are internal (self) and/or external (important others) perceptions of the consequences of the development behavior. Theoretical rationale for this exists in psychological theories of individual differences like attribution theory (Weiner, 1974) and self-monitoring (Snyder & Gangestad, 1986), and in evidence from the models mentioned above.

Attribution theory deals primarily with explaining how and why individuals make internal or external causal attributions for behavior, arguing that, “causal attributions determine affective reactions to success and failure”, and that these attributions influence subsequent motivation (Weiner, 1980, p. 362). Individual differences in the kinds of causal attributions individuals made were tied to personal characteristics like locus of control as well as perceptions of the situation like stability and controllability. Given the similarity between causal attributions and appraisal as defined above, attribution theory supports the proposition that individual differences in appraisal are likely to exist and the effects proposed for this variable on subsequent development motivation.

Individual differences in self-monitoring, or sensitivity to others’ perceptions of you and willingness and ability to control self-presentation, as noted by Snyder and Gangestad (1986), also support the proposed role of appraisal in the CED model. There are individual differences in awareness of others’ judgments and in the changes that occur on the basis of these perceptions. These individual differences also help explain the cognitive and affective components of appraisal and how this variable could influence future motivation. Individual differences in the perception and reaction of others’ appraisal will affect subsequent attitudes and actions, including employee development behavior. These differences will also help form self-perceptions or appraisals as well.

Additional rationale for this variable in the CED model can also be found by examining the prior models mentioned above (c.f., Maurer, Weiss, & Barbeite, 2004). The simple occurrence of prior development behavior should logically not have as strong a link to future development motivation as the positive appraisal of development behavior outcomes. For example, if the outcome of engaging in a development behavior is

appraised negatively, this will decrease future development motivation, at least for this and other associated development behaviors. This is in contrast to the model proposed by Maurer, Weiss, and Barbeite (2004) that had a direct link from development behavior to antecedent variables in their model.

In the continuous employee development model the appraisal process is conceptualized as operating passively in the sense that it is based on feedback information readily available to the employee, that is, appraisal is based on perceptions of immediately available information. This includes perceptions of what others around them are thinking and assessment of how they feel. It is, however, acknowledged that some individuals will engage in more active feedback-seeking behavior than others. For instance, differences in achievement motivation (McClelland & Boyatsis, 1982) and self-monitoring (Snyder & Gangestad, 1986), as mentioned above, will determine the extent to which this occurs. However, feedback seeking is not included as a variable in the model because appraisal is proposed to occur independent of feedback seeking. That is, although those who engage in feedback seeking will have more information to appraise, whether feedback seeking behavior occurs does not directly effect future motivation, rather, this is affected by the appraisal of whatever outcomes are currently perceived by the employee.

Individual differences may also exist on who feedback is sought from (Ashford, Blatt & VandeWalle, 2003). For instance, in terms of appraisal by others, whose appraisal is considered important to an employee is likely to differ based on the individual and the type of task attempted. Where self approval is concerned, though, whether the consequences of engaging in the chosen developmental activity resulted in

valent rewards is a simple comparison for extrinsic rewards but an internal cognitive/evaluative process for intrinsic rewards. Because more developmental behavior occurs for intrinsic reasons (Maurer et al., 2003; Sterns & Huyck, 2001), which factors may influence this self-appraisal are important considerations for a model of continuous employee development behavior. Therefore, moderators of the formation of appraisal are discussed below.

In the continuous employee development model, appraisal is proposed to mediate the effects of engaging in development activities on future development motivation, or help determine future outcome expectations, as the processes of engaging in development on an ongoing basis will logically require some form of cognitive appraisal of the effects of engaging in prior development. This appraisal of prior development activity outcomes then also becomes part of an individual's previous work experiences and thus is proposed to indirectly shape motivation for future development by influencing the malleable characteristic antecedents, as described in the section above on the effects of prior work experiences. The appraisal formed from internal (self) and external (important others) feedback after engaging in development activities is therefore proposed to exert both direct and indirect effects on future motivation to engage in development behaviors. This appraisal is an important component of the continuous employee development model because it uniquely allows the model to explain how future development motivation can be affected by past development. It provides a feedback loop not present in other models of development motivation (Maurer, Weiss, & Barbeite, 2004).

Moderators of Appraisal of Developmental Outcomes

Research and theory point to two variables that should moderate how the results of engaging in development activities are appraised by individuals, learning orientation, and implicit theory. These variables are proposed to affect the interpretation (or appraisal) of internal or external feedback that is generated after an individual engages in development activities.

In her studies with children, Dweck (2000) found that implicit theory predicted children's strategies for dealing with initial setbacks or failure. Entity theorists blamed their lack of success on their ability and adopted a "helpless" strategy on subsequent trials where they stopped trying and even lost confidence that they could solve problems that they had just solved previously. Incrementalists, in contrast, blamed their lack of success on effort, not themselves, and tried harder. Thus an individual's implicit theory should predict how they respond to initial setbacks and failures, that is, whether individuals persevere or give up when they do not receive positive feedback for their efforts. Either incremental or entity theorists may be motivated to engage in further development following positive feedback or outcomes from developmental activities, but incremental theorists should be more likely to persevere in the face of difficulties.

A learning goal orientation is also proposed to moderate the appraisal formed from feedback, specifically, to have a buffering effect in a similar fashion to that proposed for incremental theorists. Colquitt and Simmering (1998) found learning orientation buffered the effects of negative feedback during initial learning stages by lessening its impact on self-efficacy for further learning. These variables, then, enable the

model to propose explanations of the processes involved in employee's motivations to sustain and repeat development behaviors.

CONTRIBUTIONS OF THE CONTINUOUS EMPLOYEE DEVELOPMENT MODEL

The continuous employee development model makes a number of significant contributions to the career development literature. First, it helps address temporal issues associated with continuous employee development, like changes in career goals and shifts in priorities over time. For instance, input from the external environment (organizational/economic environment) may cause direct changes in an employee's outcome expectations, or beliefs regarding the efficacy of engaging in different development activities, resulting in a shift in development priorities. Similar influences on variables like self-efficacy, positive or negative, could even affect career goals if they were strong enough to cause changes to their outcome expectations.

It also helps distinguish this concept from related concepts and models, can provide guidance for organizations on promoting these processes and it makes specific testable propositions. These propositions are listed in Appendix A where it is also noted which propositions are being tested by the present study.

Summary of Hypotheses

Hypothesis 1: Outcome expectations will have a significant positive relationship with intentions to develop.

Hypothesis 2: The relationship between outcome expectations and intentions will be stronger than the relationship between outcome expectations and development behavior.

Hypothesis 3: The relationship between outcome expectations and intentions to develop will be stronger than the relationship between attitude towards development and intentions.

Hypothesis 4a: Comparison testing of two models, which are different only in whether they contain outcome expectations or development attitude, will yield better structural equation modeling fit indices for the model containing outcome expectations.

Hypothesis 4b: Comparison testing of two models containing both outcome expectations and development attitude, but differing in whether outcome expectations has any connecting paths to other variables in the model, will yield better structural equation modeling fit indices for the model containing these connecting paths.

Hypothesis 5: Occupational self-efficacy will have a significant positive relationship with outcome expectations.

Hypothesis 6: Work-related implicit theory will have will have a significant positive relationship with outcome expectations. Incremental implicit theory will lead to greater outcome expectations than entity implicit theory.

Hypothesis 7: Work domain learning goal orientation will have a significant positive relationship with outcome expectations.

Hypothesis 8: The relationship between work-related implicit theory and outcome expectations will be stronger than the relationship between (general-level) implicit theory and outcome expectations.

Hypothesis 9: Work-related implicit theory accounts for variance in outcome expectations even when work domain learning goal orientation is already in the regression equation.

Hypothesis 10: The positive relationship between work-related implicit theory and outcome expectations will be significantly greater than the relationship between work-related locus of control and outcome expectations.

Hypothesis 11: Comparison testing of two models, which are different only in whether they contain work-related implicit theory or work locus of control, will yield better structural equation modeling fit indices for the model with work-related implicit theory.

Hypothesis 12: Comparison testing of models containing both work locus of control and work-related implicit theory but differing in whether work locus of control has any connections to other variables in the model will yield better structural equation modeling fit indices for the model without such paths.

Hypothesis 13: The relationship between occupational self-efficacy and outcome expectations will be greater than the relationship between occupational self-efficacy and Maurer's attitudes scale.

Hypothesis 14: The relationship between work-related implicit theory and outcome expectations will be greater than the relationship between work-related implicit theory and Maurer's attitudes scale.

Hypothesis 15: The relationship between work domain learning goal orientation and outcome expectations will be greater than the relationship between work-related learning goal orientation and Maurer's attitudes scale.

METHOD

The following sections describe the study performed to test these hypotheses and the results obtained. The study involved the administration of surveys in three different phases and using two different formats. This design was both an attempt to control for possible mono-method biases, as all of the surveys are self-report, and to allow the testing of predictive relations.

Participants

All participants were volunteers from either the University of Central Florida or Valencia Community College who were employed in various positions. All were recruited from training classes organized by the HR departments of the institutions for institution personnel, staff or faculty, over an eight month period. After being told the study's rationale, procedures, data collection schedule, and prize drawings, a total of 474 individuals agreed to be in the study and filled out the first set of questionnaires. Of these individuals, 305 completed and returned the second set of questionnaires. Three months later, 227 of these individuals completed the final questionnaires. Power analyses indicated that for the statistical procedures used to test the hypotheses, 200 participants would provide acceptable power to detect effects (see Appendix C for calculations).

Measures

All data were collected via surveys administered either in paper and pencil format or on the computer via email, with the time of administration dictating the format to help

control for mono-method bias as mentioned above. The scales include a demographics survey and implicit theory, occupational self-efficacy, work domain learning goal orientation, work locus of control, work-related implicit theory, outcome expectations, development attitude, intentions to develop and participation in development scales. Appendix B contains a list of these scales grouped by time and method of administration and the two newly constructed scales, work relation implicit theory and outcome expectations.

The demographics survey consisted of 11 items which were forced-choice or require placing a numerical answer after the items. Sample questions included age, gender, current position, and how long they have worked for their present employer. The implicit theory scale was developed by Dweck (2000) and her colleagues. It measured beliefs about the malleability of one's general intelligence. It had 8 items and was scaled on a 7-point Likert-type scale with 7 = strongly agree and 1 = strongly disagree. A sample item was, "You can always substantially change how intelligent you are". Thus higher scores were more indicative of incremental implicit theory.

The 9 item occupational self-efficacy scale was developed by Schyns and Van Collani (2002) who adapted the content of general self-efficacy scales to the work context. A sample item was, "When I am confronted with a problem in my job, I can usually find several solutions". Items were scaled on a seven point Likert-type scale with 7 = completely true and 1 = not at all true. The work domain learning goal orientation scale was developed by VandeWalle (1997) when he adapted the goal orientation scales originally developed by Dweck (1986) to adult work settings. One's work domain learning goal orientation is the extent to which they value increasing their work-related

competence and believe they can change their skill levels. This 5 item scale was scored on the same 7-point Likert-type scale. A sample item was, “I enjoy challenging and difficult tasks at work where I’ll learn new skills”.

Work locus of control was administered to test the construct validity of work-related implicit theory in the CED model, as described above. Rotter’s (1966) original internal versus external control of reinforcement scale, more commonly known as locus of control (LOC), measures the extent to which individuals believe that outcomes of their behavior are due to their own actions (internals) or are due to the actions of others, or luck or fate. Work locus of control was measured with a scale adapted from Rotter’s (1966) original LOC scale by Spector (1988). The original items were changed to reflect a work setting and the format was changed from a forced-choice to a 6-point Likert-type scale with 6 = agree very much and 1 = disagree very much. A sample item from the 15 item scale was “Getting a job you want is mostly a matter of luck”. Low scores were indicative of an internal locus of control.

Items for the work-related implicit theory scale were adapted from Dweck’s (2002) items. Thus, it was the same length as the original and used the same scoring, though the wording was changed to reflect a work setting. The items for the work-related scale assessed one’s implicit theory regarding their work-related abilities. The equivalent sample item for the implicit theory sample item given above was, “I can always substantially change my job-related abilities”. Pre-testing of this scale was done with 30 individuals from the participant pool described above who volunteered after being asked to take part in a ten minute study on employee development and told there would be prize drawings at the end of the study. They were given a one-time administration of this and

three other scales and asked to carefully read and answer each item, telling the researcher if the wording of any item was unclear. Changes to the wording of items were made until administration of the items elicited no further comments.

The 31 item outcome expectations scale was developed with the 31 item intention and development scales of Maurer, Weiss, and Barbeite (2003) as a template for content. Maurer developed his scales to assess a variety of work development-related activities, both present job and non-present job-related, mandatory and volunteer, and discreet and continuous. In designing the scale for outcome expectations, instructions and wording of these activities were changed however, to capture both the expectations of successful performance with effort, and valence or the desirability of the reward believed to accompany accomplishment, as per the theory of the construct of outcome expectations reviewed above. For example, the instructions asked the participant how strongly they do or do not believe that a positive outcome will result from each item, whereas Maurer's attitude scale asked participants about their attitudes and interests. The scale was also a seven point Likert-type scale with 7 = strongly believe and 1 = strongly do not believe. Items included, "Taking a one time training class from my organization", "Working towards a college degree", and "Learning the skills or duties of other similar jobs". This scale was also pre-tested in the pilot study described above for the work-related implicit theory scale. None of the 30 participants reported any difficulty understanding the instructions or the items and made no comments regarding the possible improvement of the scale.

Three scales from Maurer et al's 2003 model of involvement in work-related learning and development activity were also used. These scales were all used by Maurer

and his colleagues in previously published research studies. The first, Maurer's et al's (2003) attitude toward career development scale, was used to help validate the outcome expectations scale. This eight item scale was scored on a seven point Likert-type scale where 7 = strongly agree and 1 = strongly disagree. Sample items included, "I feel favorably toward the idea of improving my career related skills" and "An excellent way to spend my time is learning new things for my job and career".

The other two scales of Maurer et al (2003) that were used to test identical variables in the continuous employee development model were intentions to engage in development and participation in development activities. Both scales were identical in format with differences only in their instructions and the future or present tense of the items. Thus, both had 27 items, and were scaled on a 6 point scale indicating frequency where 6 = about 6 times or more and 1 = never. A minor change was made in the instructions of both scales because of difference in the duration of Maurer's and the present study. The original instructions asked for intentions or behavior for a 12 month period but this was changed to a three month period because the present study used a longitudinal design of a shorter duration than Maurer et al (2003). Thus, the intentions scale asked the number of times a participant intended to do the following activities in the following 3 months with items such as, "Take an optional college or continuing education course", "Work to learn a new skill on the job", and "Ask for feedback and input from coworkers". The participation in development scale asked the number of times a participant actually did participate in the same activities in the past 3 months, using the same items.

Procedure

UCF and Valencia College Human Resource training classes were used to solicit participants for the study. Prior permission was obtained from the classes' instructors and the researcher was introduced to the class by its instructor at the end of the class. Training class participants were then asked by the researcher if they wished to participate in a survey-based study on employee development. They were told that it was a three part study which would take 10 minutes of their time today, 5-10 minutes of their time when they were reached via email within the next week, and 5-10 minutes of their time after three months when they were sent the remaining surveys. They were also told that there would be a drawing for multiple prizes when the study was finished and that all those who filled out all the survey forms would be eligible for these prizes, which included an iPod player and gift certificates to local restaurants. To ensure that individuals were not resampled, training classes were also told that they could only be entered into the prize drawings once. Those who agreed to participate were given the consent form to read and sign and filled out the first set of questionnaires in the training classroom at their desks or tables and handed them to the test administrator when they were finished. This first set of questionnaires was in paper-and-pencil format and contained the demographics scale, and the scales for implicit theory, occupational self-efficacy, work domain learning goal orientation, work locus of control, and work-related implicit theory. These scales had a total of 56 items and were completed by participants in between 5 and 15 minutes.

Participants email addresses were all collected on the consent forms so that they could be contacted with the second set of questionnaires. Within the next two days, all participants received the second set of questionnaires via their email. These scales had a

simulated fill-in-the-blank format but participants were asked to fill them out on their computers and send them back to the researcher through their email to vary the administration format in an attempt to protect against mono-method bias. There were three scales in the second set of questionnaires; outcome expectations, and Maurer's attitude and intentions scales. These contained a total of 66 items.

Three months after the date that each participant returned the second set of surveys, they were sent, again via email, the third set of questionnaires. However, this time they were asked to print out the questions, manually complete them, and return them, via campus mail, to the researcher. Thus, the third set of questions were also administered via paper and pencil format. This final set contained Maurer, Weiss and Barbeite's (2003) participation in development scale and re-administrations of the work-related implicit theory and outcome expectations scale. The latter two scales were repeated to test the scales' reliability over time. There were a total of 66 items in the third set of questions.

Administering the questionnaires at three different time periods was done to test predicted relations between variables. In the continuous employee development model, outcome expectations predict intentions and intentions predict development behavior. Outcome expectations and intentions can be measured at the same time, though, because present outcome expectations are proposed to predict current intentions to engage in future behavior. A gap is needed between intentions and behavior measures, though, to properly test their predictive relationship.

Results

Characteristics of the samples will be given first, followed by an examination of the two new questionnaires, work-related implicit theory and outcome expectations. The results of the hypothesis testing will be presented next with the correlational and regression-based testing listed before those requiring structural equation modeling. All descriptive, correlational, regression, and factor analyses were performed on SPSS statistical software with alpha levels explained in the respective sections below. All structural equation modeling was done on AMOS, using SPSS data files.

Descriptive Analyses

Examination of the demographic characteristics of the sample revealed an educated sample, with 66 % of participants possessing a bachelors degree or higher. Of these, 33 % held a graduate degree. The average age was 40 years, with a standard deviation of 12.8. The sample was primarily Caucasian (64 %), with 18 % Hispanic, 10 % African American, 3 % Asian, and 1.7 % Native American. The category of “Other” was chosen by 2% of the sample. The sample was also 66 % female and had worked at the university or college for an average of 5 years.

None of these variables was significantly related with any of the dependent variables in the study when tested at an alpha level of 0.05. This level was not adjusted for the number of tests performed in these analyses to reduce the possibility of Type II errors; in this case, rejecting a possible covariate. There was no main effect for gender, dichotomized race, age, or education level in regression equations predicting either outcome expectations, development attitudes, intentions, or participation. The interaction

between race and gender, race and age, and race and education level, with outcome expectations as the dependent variable, was also examined by creating six dichotomous variables for the 6 races measured in the study. None of these interaction terms were significant. Finally, age, education level, gender and the six dichotomously coded race variables, all entered simultaneously in a regression equation to test if the set of variables accounted for a significant amount of variance in outcome expectations, was not significant ($p = 0.8$). Therefore, these variables were not used as controls or covariates in any of the analyses. There was also no difference in average values or relationships between variables between the sample from UCF and Valencia Community College so these variables were treated as one sample in all subsequent analyses.

The means, standard deviations, and results of tests for normality for all scales are given in Table 1. Given that antecedent variables had a score range of 1 to 7, this table demonstrates the high means for work goal orientation and development attitudes obtained in the sample. Skewness and kurtosis values should also not differ markedly from 0 for results to be considered normally distributed, however Tabachnick and Fidell (2001) note that in large samples ($n > 200$) even minor deviation from 0 can be statistically significant deviations and that visual inspection of histograms are more meaningful. Therefore, only visual inspection of histograms (with superimposed normal distributions) were used to confirm any findings of statistically significant results on skewness and kurtosis (Tabachnick & Fidell, 2001, p. 73). Only work goal orientation and development attitudes were non-normal distributions that deviated markedly from a normal distribution around their means (see Figure 2 and Figure 3).

The means and histograms of both work goal orientation and development attitude provided evidence of the negative skew of these variables' distributions. One danger of a skewed distribution is range restriction, which can attenuate observed relations with other variables. Another is the violation of the assumption of normality that accompanies most parametric tests that their use entails (Kerlinger & Lee, 2000). Therefore, the data for these scales was transformed, using the logarithmic inverse transformations recommended by Tabachnick and Fidell (2001, p. 83) for the type and degree of skewness demonstrated. The new mean and skewness values for these scales are reported in Table 1 and the histograms for these transformed scales are shown in Figures 4 and 5. All subsequent analyses with these variables was done with these transformed scales.

Visual analyses of the scatterplots for all bivariate relationships examined for the hypotheses did not reveal any clear instances of heteroscedasticity so no data transformations were performed. This corresponds with Tabachnick and Fidell's (1991) general recommendations against transformations.

Examination of New Scales

Two methods were used to test the reliability of the two new scales, work-related implicit theory and outcome expectations, test-retest reliability and internal consistency or calculation of coefficient alpha. Test-retest reliability was available due to the administration of these scales at both Time 1 and three months later at Time 3. These reliability coefficients were not high ($r = 0.402$, $N = 227$, $p < .001$, for work-related implicit theory and $r = 0.321$, $N = 223$, $p < .001$, for outcome expectations). According to

Gatewick and Field (2001), this score should not be below 0.85, though this cutoff level was given for tests to be used in employment selection decision making. Even by the most lenient standards (c.f., Kerlinger and Lee (2000) who argue that lower values may be acceptable for non-critical decision making and research), these are low figures, even when the three month delay in testing is taken into consideration.

More encouraging was the internal consistency scores for these scales. The coefficient alpha for the outcome expectations scale was 0.92 and the coefficient alpha for work-related implicit theory was 0.865. The high alpha score for outcome expectations indicates that, although very different kinds of development activities were represented in the scale, there is nonetheless a tendency for individuals to anticipate relatively consistent reactions for engaging in a variety of development behaviors.

Hypothesis Testing

The correlations between all study variables are given in Table 2. All correlations were in the expected direction (positive) although the scoring of one scale (work locus of control) and the transpositions of goal orientation and development attitude made these variables have negative correlations with all other study variables. For ease of analysis and interpretation, the absolute values of these correlations were used and are reported in Table 2. As well, correlations in the table are flagged for significance at an alpha level of 0.05, although this is not the significance level used for testing the hypotheses that relied on correlations. They were so labeled for simplicity and in keeping with convention. These correlations were tested using a more stringent level of .003 which was computed using the Bonferroni correction for multiple tests, that is, dividing the conventional alpha

level of 0.05 by the number of tests using correlations or 13 (Tabachnick & Fidell, 2001). The examination of the hypotheses involving correlations and regression analyses are presented in the subsequent section, followed by the hypotheses involving structural equation modeling. All hypotheses and their corresponding results are summarized in Table 3.

Correlation and regression-based testing.

The first hypothesis, that outcome expectations would have a significant positive predictive relationship with intentions to develop, was not supported ($r = 0.109$, $N = 305$, $p = .056$). The following two zero-order correlation hypotheses (H2 and H3) were also not supported. The correlation between outcome expectations and intentions ($r = 0.109$) was not greater than the correlation between outcome expectations and development behavior ($r = 0.213$, $N = 223$), and the correlation between outcome expectations and intentions ($r = 0.109$) was not greater than the correlation between development attitude and intentions ($r = 0.448$, $N = 305$).

Hypotheses 5 through 7 were also zero-order correlation hypotheses, and support was found for all three of these. Hypotheses 5, 6 and 7 stated that significant positive correlations with outcome expectations would exist for occupation self-efficacy, work-related implicit theory, and work domain goal orientation, and these were all supported ($r = 0.268$; $r = 0.237$; $r = 0.208$; $N = 305$, $p < .001$ for all).

Hypothesis 8 was a comparison of correlations to prove the greater validity of work-related implicit theory in the CED model versus general level implicit theory. The general-level and work-level variables correlated with outcome expectations 0.237 and

0.061 respectively ($N = 305$ for both), which were significantly different ($t = 2.79$, $\alpha_{crit} = 1.64$). Thus, Hypothesis 8 was supported.

Hypothesis 10 stated that the relationship between work-related implicit theory and outcome expectations would be greater than the relationship between work locus of control and outcome expectations ($r = 0.237$ and $r = 0.146$ respectively, $N = 305$ for both). Though absolutely greater, this was not a statistically significant difference ($t = 1.12$, $\alpha_{crit} = 1.65$). Therefore, Hypotheses 10 was not supported.

The remaining zero-order correlation hypotheses were also not supported. Hypothesis 13 was not supported as the correlation between occupational self-efficacy and outcome expectations ($r = 0.268$, $N = 305$) was not greater than the correlation between occupational self-efficacy and development attitudes ($r = 0.298$, $N = 304$). Hypothesis 14 was not supported as the correlation between work-implicit theory and outcome expectations ($r = 0.237$, $N = 305$) was not greater than the correlation between work-related implicit theory and development attitude ($r = 0.307$, $N = 304$). Hypothesis 15 was not supported as the correlation between work domain goal orientation and outcome expectations ($r = 0.208$, $N = 305$) was not greater than the correlation between work domain goal orientation and development attitude ($r = 0.463$, $N = 304$). Generally, the zero-order correlation results did not support the use of outcome expectations over development attitudes in a model of employee development motivation.

The last hypothesis in this section was the only regression-based test in the study. Hypothesis 9 stated that work-related implicit theory contributed unique variance in predicting outcome expectations when work domain learning goal orientation was already in the regression equation. This hypothesis was supported as a statistically

significant change in R^2 was found when work-related implicit theory was entered in the second step of a hierarchical regression equation already containing work domain goal orientation ($\Delta R^2 = 0.027$; $p = .003$). Only goal orientation was included in the hypothesis because of the conceptual similarity of these variables and the preliminary concern with demonstrating the incremental validity of work implicit theory over this variable.

However, an additional regression equation also including the other antecedent variable, occupational self-efficacy, in the first step could additionally be tested to provide a more stringent post-hoc hierarchical regression test of this hypotheses. With both work domain goal orientation and occupational self-efficacy in the first step this test was statistically significant at the 0.01 significance level ($\Delta R^2 = 0.02$), but this test was not significant at the more stringent 0.003 alpha level used for the rest of the tests in this section.

Therefore, work-implicit theory did not contributed unique variance in a regression equation predicting outcome expectations after the variance of both occupational self-efficacy and work domain goal orientation were accounted for.

SEM-based testing.

Structural equation modeling was used to test Hypotheses 4a, 4b, 11, and 12. For present purposes, the use of SEM involved comparing different variations of the CED model against each other to determine which showed a better fit with the data. The different models compared can be found in the Figures section, and a table was also created for easy reference listing the values of various fit indices for all models (see Table 4). Four fit indices were chosen for the comparisons because they were a fair sample of absolute, comparative, and parsimonious fit indices. The RMSEA is an

absolute fit index with values below .05 being ideal and lower value being generally preferable. The CFI is a comparative fit index ranging from 0 to 1 with higher values being preferable and values above .9 ideal. The PNFI is a parsimonious fit index, which accounts for the complexity of a model in determining its value. It also ranges from 0 to 1 with higher values considered better. The AIC is another parsimonious fit index, but with no fixed range and lower values being preferable. In addition to these four fit indices, when models were nested, that is, links or variables are only added or subtracted, not both, a chi-squared difference test was calculated to determine parsimonious fit.

Although there is no convention on which single fit index is best to use, parsimonious fit indices are generally preferable, with chi-squared being the best choice when nested models are available for comparison. Unfortunately, with large sample sizes like the present sample, it is very difficult to observe a non-significant chi-squared statistic, even for very small changes, because of the increased power afforded by the sample size. For convention, this statistic will still be reported when nested models are compared.

The first comparison was not a test of hypotheses, though, but a test to determine the best way to specify the CED model given the theorized relations between the variables. Model 1 (Figure 6) is the first way that the model could be drawn. In this model work-related implicit theory, occupational self-efficacy, and work domain goal orientation are free to covary (this is depicted by the curved lines connecting all three of them) but the endogenous variables (outcome expectations, intentions, and development behavior) are not. These variables also have their path coefficients fixed to one in order to keep the model from being locally underidentified. Model 1.1 (Figure 7) also depicts the

relations between these variables as predicted in the CED model but in a way more theoretically consistent with the true relations likely to exist between the variables, allowing the endogenous variables to covary.

Examination of the fit indices corroborate the theoretical prediction, there is some proof that Model 1.1 is a better fit for the data than model 1. A chi-squared difference test was done as the models were nested (connections were added and nothing was subtracted) and it was significant (X^2 difference = 13.184, $df = 3$, $X^2_{crit} = 7.81$). However, better fit indices were seen for the RMSEA, the CFI, and the AIC, though not for the PNFI. Although these comparisons provide some evidence, they were not unanimous, and when combined with SEM convention, an argument could be made for the use of Model 1 over Model 1.1. The greater difficulty interpreting models with covariations between endogenous variables alone gives weight to this argument. Therefore, Model 1 was used as the standard representation of the CED model in most comparisons below.

This comparison also illustrates the subjective nature of evaluating SEM fit indices. This was the reason for the triangulation of methods to test CED model propositions. SEM analysis does provide unique useful information, though, because of its ability to test multiple relationships at once.

Hypothesis 4a was tested by comparing Model 1 with Model 4 (Figure 8), which differed only in the substitution of development attitudes for outcome expectations. These were not nested models, so a chi-squared difference test could not be conducted. Model 4 was better on every other fit index, though, indicating a lack of support for Hypothesis 4a. Additional non-hypothesized comparisons were also conducted with another model because of the findings for Hypothesis 2, that is, that outcome expectations had a higher

correlation with development behavior than development attitude. Comparison of Model 2 (Figure 9) with Model 1 (Figure 6) indicated that the additional path between outcome expectations and participation produced a model with better fit to the data. The chi-squared difference test was again significant (X^2 difference = 6.083; df = 1; $X^2_{crit} = 3.84$), though Model 2 was better on the RMSEA, CFI, and AIC indices and only worse on the PNFI. These results suggest that adding an additional path between outcome expectations and development behavior may be an improvement to the CED model.

As indicated above, Hypothesis 4b is a more realistic test of the validity of outcome expectation in the CED model, given the likelihood that development attitudes contributes some variance to development participation. A comparison of model 7 (Figure 10), including both of these variables, and Model 7.2 (Figure 11), which contained both variables but no paths connecting outcome expectations to the rest of the model, yield mixed evidence but suggest that Model 7 may be a better fit for the data. Although the chi-square difference test was not significant (X^2 difference = 8.622; df = 4; $X^2_{crit} = 9.49$) and the PNFI index was worse for Model 7.2, the RMSEA, CFI and AIC indices were better for Model 7. It should be noted, however, that the path coefficient between outcome expectations and intentions drops significantly when development attitude is added to the model. In Model 1 (Figure 6), this path was significant at the .05 level (two-tailed), but in Model 7, it is not. AMOS reports the probably level for this path at 0.055, so it would be significant using a one tailed test, but it still suggests that the addition of development attitudes (Model 7) and/or other changes may be warranted in the CED model.

To further examine these possible changes, another non-hypothesized comparison was performed between Model 7 (Figure 10) and Model 7.3 (Figure 12). The results indicated that the addition of a path between outcome expectations and participation, when both development attitude and outcome expectations are in the model, was a significant improvement. Though the nested model comparison was significant (X^2 difference = 6.07; df = 1; $X^2_{crit} = 3.84$), the RMSEA was not appreciably different, and the PNFI worse, the CFI and AIC indicated a better fit to the data for Model 7.3.

It should be noted that Model 7.3 is not better on the RMSEA, CFI, PNFI or AIC than either Model 4 (Figure 8) or Model 2 (Figure 9) but the choice between these models highlights another subjective component of SEM; analysis can be based on the numerical results only, or theoretical considerations can temper interpretation. That is, though a main goal of SEM is parsimony, or simple models, the ability to maximize the explained variance in a DV is also a goal of scientific research. This is applicable here in that one goal of the CED model is to explain variance in development behavior. Thus, although on a strictly numerical basis, parsimonious models like Model 2, provide better fit indices than models like Model 7.3, compelling arguments can still be made in favor of the latter model on the basis of explained variance. Two different analyses provide this evidence.

First, from Model 7.3, the standardized regression weight representing the path coefficient between outcome expectations and development behavior was 0.161 ($p = .01$). As this calculation comes from SEM analyses, it is a value estimating the unique contribution of outcome expectations in predicting development behavior after the variance from all other variables in the model affecting development behavior have been accounted for. Second, in a hierarchical regression equation predicting development

behavior where occupational self-efficacy, work domain learning goal orientation, work-related implicit theory, development attitude, and intentions were entered in the first step and outcome expectations entered in the second, outcome expectations had a standardized beta weight of 0.134 ($p = .059$). As this latter probably level is two-tailed and would be significant as a one-tailed test, both of these findings argue that outcome expectations contributes significant additional variance to the prediction of development behavior. Therefore, from the viewpoint of contributing additional explained variance, outcome expectations belongs in a model of employee development behavior.

The last two hypotheses, 11 and 12, involved testing the validity of work-related implicit theory in the CED model using work locus of control. Hypothesis 11 stated that a model containing work implicit theory (Model 1, Figure 6) would fit the data better than a model instead containing work locus of control, as in Model 3 (Figure 13). Fit indices yielded equivocal results, with a RMSEA that was virtually the same, worse CFI and PNFI, and better AIC indices for Model 3. However, the path coefficients in Model 3 between work locus of control and outcome expectations was not significant ($-0.07, p = .311$). For comparison, the path between work implicit theory and outcome expectations in Model 1 is significant ($.112, p = .005$). This suggests that, fit indices aside, work locus of control does not contribute significant unique variance in the model, given the present sample.

Hypothesis 12 allows for the possibility that both variables may belong in the model. To test this hypothesis, Model 6 (Figure 14) containing both variables, is compared to Model 6.5 (Figure 15), which contains both variables but no paths to or from work locus of control. The nested comparison test was again significant ($X^2 \text{ difference} =$

30.01; $df = 4$; $X^2_{crit} = 9.49$), but all other indices suggested Model 6 was a better fit to the data. However, the observation of a zero as the path coefficient in Model 6 between work locus of control and outcome expectation may be the most significant finding of these comparisons. Though a model containing links to work locus of control fit the data better than a model containing this variable but with no such links, work locus of control did not contribute enough unique variance, with work-related implicit theory, occupational self-efficacy, and work domain goal orientation in the model, to have a significant path coefficient to outcome expectations. This finding corroborates the finding observed for Hypothesis 10, where the absolute value of the correlation between work-related implicit theory and outcome expectations was greater than that between work locus of control and outcome expectations, even though the difference between these two correlations was not statistically significant. In concert, these findings suggest that work locus of control is not a necessary variable in the CED model.

In addition to the data used to test the study's hypotheses, these SEM analyses also provided data from the path coefficients automatically calculated by AMOS between each variable connected in a model. These path coefficients are equivalent to partial correlation coefficients as they are an indication of the relationship between two variables after all other variables at the same level of the model with connections to the same variable are taken into account. Therefore, they can be used to determine the unique variance contributed by a variable and if a variable is a unique predictor, like hierarchical regression, which was used to test Hypothesis 9. Use was already made of these path coefficients in interpretation of the results from the SEM analyses for Hypotheses 11 and 12 involving work locus of control.

The path coefficients which will be highlighted here involve the CED antecedent variables; occupational self-efficacy, work domain learning goal orientation, and work-related implicit theory. Examination of their path coefficients in the various models tested above reveals that work-related implicit theory had significant path coefficients whether outcome expectations or development attitudes was in the model. The other two antecedents had more variable results. Work domain learning goal orientation had a significant path coefficient when it was paired with development attitude but not when it was paired with outcome expectation. Conversely, occupational self-efficacy did not have a significant path coefficient when paired with development attitude but did when paired with outcome expectation.

DISCUSSION AND CONCLUSIONS

Summary of Findings

All of the hypotheses could be grouped into three general categories, simple correlation-based tests of the relationships between variables as depicted in the CED model, different types of tests to assess the validity of work implicit theory in the CED model, and different types of tests to assess the validity of outcome expectations in the CED model. There was general support for the first set of hypotheses, where they involved the model's antecedents, moderate support for the second, and generally poor support for the third.

The first category of hypotheses are identified as correlational tests in Table 3. Where these tests involved the antecedents, their role in the model was generally upheld. All three antecedents had significant correlations with outcome expectations. However, the pattern of results from SEM path coefficients revealed a more complicated picture in terms of the unique variance accounted for in predictors by the antecedents. Goal orientation did not account for significant unique variance in outcome expectations and occupation self-efficacy did not account for significant unique variance in development attitude. One conclusion derivable from both these hypotheses tests and the SEM path coefficients is that regardless of the predicted variable, work-related implicit theory was a significant predictor.

However, the hypotheses from this first category involving outcome expectations were not supported, a pattern also observed in the results for the third category of hypotheses. This category involved correlational and SEM tests of the placement

outcome expectations in the CED model and its construct validity. None of these hypotheses were supported; outcome expectations was not a significant predictor of intentions, the antecedents predicted attitudes better than outcome expectations, and models with development attitudes instead of or in addition to outcome expectations fit the data better than models without. However, outcome expectations did have significant correlations with the model's antecedents and with development behavior, and did contribute significant additional variance in predicting development behavior after all other variables were accounted for. When combined with the finding reported above that a model containing both development attitudes and outcome expectations was improved by adding a direct path between outcome expectations and development behavior, this suggests that outcome expectations does belong in the model but may be more properly placed as a mediator between the antecedents and development behavior.

The results for the second category of hypotheses, those testing the validity of work implicit theory in the CED model, were mixed, but provided support for the inclusion of this variable in the model. The correlational and SEM tests of work-related implicit theory supported the use of this variable as opposed to general-level implicit theory in the model, and found that work implicit theory predicted variance in outcome expectations over and above that accounted for by work domain goal orientation. The negative results from the correlational and SEM fit analyses of work-related implicit theory were also contradicted by the pattern of significant path coefficients in the SEM models. The negative results included the stronger, but not significantly stronger correlation between work implicit theory and outcome expectations versus work locus of control and outcome expectations, and that the models that excluded work locus of

control or had no paths containing the variable were not better than those including the variable or connected paths. The SEM path coefficients which contradict these findings include work-related implicit theory having significant path coefficients (accounting for unique variance in all SEM models), and work locus of control not having significant path coefficients, with their predictor variables. Hence the conclusion mentioned above that despite the results of the SEM fit indices, work locus of control appears to be a redundant variable in the CED model, and work-related implicit theory appears to be a valid antecedent.

Validity of New Scales

These findings provide mixed reliability and validity evidence in support of the two new scales, outcome expectations and work related implicit theory. In terms of reliability, the test-retest correlations for both of these scales were low, though their internal consistencies were more encouraging. Numerous explanations exist for the low test-retest correlations including the gap in time between administrations and these numbers being indicative of the extent to which these variables are states or traits. Prior research exists that implicit theory can be manipulated (Craig, 2003; El-Alayli & Baumgardner, 2003; Heslin et al, 2004) and the CED model proposes interrelationships between these variables and others in the model, but further research will be necessary to determine whether these variables are fixed or can change over time. This issue will be discussed further below in the sections on limitations and future research.

From a validity standpoint, in terms of whether these two scales appeared to be measuring what they were proposed to measure, work-related implicit theory behaved as

expected, but outcome expectations did not. As reviewed above, work-related implicit theory generally had expected correlations with other study variables but while outcome expectations was predicted by the model's antecedents, it had a stronger relationship with development behavior than intention (see Table 2). Therefore, either the scale did not measure the construct of outcome expectations or the role of this variable in determining employee development motivation is not as proposed in the CED model. Given the antecedent relations that were significant and the acceptable reliability of the scale, the latter will be considered the more likely candidate for the present findings. The antecedent correlation results suggest that the variable still belongs in the CED model, but it may be more directly tied to actual action than to the formation of intentions to engage in action. It was strongly correlated with development attitude as well, though, which was part of the rationale for the suggestion mentioned above that both outcome expectations and development attitude may belong in the CED model; they have common antecedents but are stronger predictors of different variables. The changes suggested by these findings to the CED model will be the topic of the following section.

Validity of CED Model

If the results do not support the current placement of outcome expectation in the CED model but there is evidence that the variable still belongs in the model, then a new CED model should be proposed. This section will explore unexpected findings, provide rationales for these findings, and outline the changes to the CED model that they suggest.

The strong positive correlation observed between outcome expectations and attitude is likely due to the conceptual similarities between the variables; an individual's

valence for expected consequences should be related to their attitude towards development. The unexpected stronger relationship of outcome expectations with behavior than with intentions can be similarly explained when the underlying theory behind these variables are reconsidered, namely, the theory of planned behavior (Ajzen, 1990) and the VIE theory (Vroom, 1964).

First, if attitudes influence intentions, a variable only partially measuring attitudes (outcome expectations) should have weaker relations with intentions than one entirely measuring attitudes, which was seen. Second, it is consistent with the theory of planned behavior to propose that behavior, if it is perceived as less likely to be rewarded, will be performed less than behavior that is perceived as likely to be rewarded. This was the rationale behind the inclusion of outcome expectation in the CED model in the first place, along with similar arguments by other authors (c.f., Fouad & Guillen, 2006). However, it does not appear to be the case that attitudes can be replaced with outcome expectations in the theory of planned behavior as it pertains to development behavior; the relationship between outcome expectations and behavior does not seem to occur through intention. Instead, outcome expectations may mediate the relationship between the antecedents and behavior.

Therefore, the following changes to the CED model are proposed; both attitudes and outcome expectations should be in the CED model, attitudes should mediate between the antecedents and intentions, and outcome expectations should mediate between the antecedents and development behavior. These changes are proposed on the basis of the findings from the hypothesis testing including these variables and because these relations

are also theoretically consistent with the theory of planned behavior (Ajzen, 1990) and VIE theory (Vroom, 1964). The new CED model is given in Figure 16.

One further issue of consideration here concerns another variable in the CED model not tested in the present study, personal non-work environment. This variable is proposed to moderate the relationship between outcome expectations and development intentions in the larger CED model. Because it was not measured, the true relationship between outcome expectations and intentions, as proposed, was not actually tested. This issue will be discussed further in the sections below.

Practical Implications

These findings can be used to provide recommendations for organizations interested in fostering and encouraging employee development behavior. First, training implications dealing with the importance of employees' personal beliefs can be derived from the antecedents of the CED model, especially work-related implicit theory. Second, the climate of a learning organization can be created or encouraged through the use of mediators from the model, namely, development attitudes and outcome expectations. Finally, two factors that should be considered in implementing interventions based on the CED model will also be discussed: The presence of interactions in the CED model and the potential that interventions may have on intrinsic development motivation.

Making recommendations using work-related implicit theory for selection will have to await the outcome of further research to explain the low test-retest reliability of this variable. As mentioned above, this variable may be malleable, affected by the passage of time or the influence of other factors (Craig, 2003; El-Alayli & Baumgardner,

2003; Heslin et al, 2004). Whether this variable is more of a state or a trait, though, the relationship of this variable with both outcome expectations and attitude and its role in the CED model can provide suggestions for training design and implementation because it is a measure of (state or trait) beliefs at a current time. Along with occupational self-efficacy, this variable points to the importance of beliefs in determining training/development motivation.

Specifically, if an individual's beliefs regarding the malleability of their work-related skills and knowledge affects their likelihood to engage in development, it may also affect training outcomes. This is proposed by the CED model, where implicit theory is proposed to moderate the relationship between intentions and development behavior, though this relationship was not tested in the current study. If true, however, this proposition suggests that training should include not only commonly recommended practices like modeling and rehearsal, but also ensure that individuals believe they can change their knowledge and skills both in training and back on the job. For example, practice and rehearsal of new skills in training should include at least one trial in which the individual does correctly perform and is acknowledged as correctly performing the required behavior on their own so they believe they can do it. Thus, the present results suggest that the beliefs of employees' of whether they even see development as something they are likely to do and actually engage in is dependent on their beliefs that they can learn from a given training situation.

Thus, work related implicit theory affects both development intentions and training efficacy. This effect should exist whether work related implicit theory is a state or a trait, as only current beliefs would matter, and training practices should incorporate

this understanding. Similar suggestions are made by Schwoerer and colleagues (2005) regarding another variable from this model, self-efficacy. Specifically, they argue it should be measured in post-training evaluation. These authors also note that these beliefs will predict individuals' motivation to engage in further development.

The second practical implication of these findings is the role they can play in helping organizations become flexible, responsive, and adaptive, the skills mentioned in the introduction as necessary for responding to the rapid changes in market conditions and technology that characterize most modern economies (Kraut & Korman, 1999). The example of the learning organization, as defined by Peter Senge (1990), was also given above. Tannenbaum (1997) demonstrated the value of being a learning institution in his study of several organizations and concluded that learning organizations demonstrated greater organization effectiveness.

A necessary component of learning organizations is ongoing engagement in learning or personal mastery: "Individual learning does not guarantee organizational learning. But without it no organizational learning occurs" (Senge, 1990, p. 137). The CED model proposes that several factors play a role in employees' ongoing engagement in learning. More specifically, the revised CED model (Figure 16) suggests that two variables may play an important direct and indirect role in determining development behavior; outcome expectations and attitudes towards development, respectively. Therefore organizations who seek the ideals embodied in learning organizations should design assessments and interventions to ensure both of these are high. Organizations could measure whether both attitudes and valued expectations were positive towards

development behaviors and seek appropriate interventions when they are not. What is especially new here is the attention to the outcomes valued by current employees.

An important caveat regarding this last recommendation, or the derivation of any simple intervention from the CED model, is the fact that variables in this model may interact to produce motivation. For instance, the extent to which the antecedents require the presence of another to predict positive outcome expectations has not been tested for all antecedents in the model. Examples include possible unspecified interactions between personal characteristics and organizational learning environment, and the proposed moderating effect of personal non-work environment on the relationship between outcome expectations and intentions. Other examples can incorporate factors from the model with other environmental considerations, as attention to any antecedent factors that is not accompanied by attention to ensuring individuals have adequate access to development activities may have limited effects on employee development activity.

London and Mone (1988) also raise an important related point regarding the use of any single factor for rewarding, encouraging, or selecting for continuous employee development behavior. Such efforts run the risk of valuing product over process, and in so doing, may also hurt intrinsic motivational factors (Deci & Ryan, 1985). For example, companies who have tied compensation to the acquisition and transfer to the job of new skills, and others who financially reward workers for acquiring other team members' skills, to encourage cross-training (Geber, 1995), may be encouraging development, but they may not be encouraging *self-motivated* development. By its definition, continuous employee development involves self-motivated development, and behavior that that is done in order to get a reward would no longer be self-motivated. There is a greater risk

that externally motivated behavior will no longer be performed if rewards are no longer given than internally motivated behavior (Deci & Ryan, 1985).

Tannenbaum (1997) raises another important related point. Not all individuals will be equally motivated by the same interventions, especially those differing in their goal orientation. He notes that individuals with predominantly learning or prove goal orientations will be differentially motivated by different kinds of rewards (Tannenbaum, 1997). Thus any assessments and interventions should be designed with the complexity between factors suggested by the CED in mind. Actions meant to affect one variable in the model may have unintended or no effects due to the influence of a preceding, proceeding, or moderating variable.

However, this model is an important first step towards understanding of the relationships between the factors determining continuous employee development motivation. Some recommendations for practice can also be derived from the findings. This study suggests an important role intrinsic beliefs can play in determining training motivation, and therefore involvement, and training efficacy. Training design should ensure that individuals walk away from the training situation with a belief that they can perform the required skills or do possess the desired understanding. There also should be an understanding of the dual role played by both development attitudes and outcome expectations in determining development motivation, employees should believe that personally valent rewards will result from their engagement in development activities.

LIMITATIONS

Although all of the scales used in this study were fill-in-the-blank and self-report, mono-method bias should not have been a limitation because of the controls that were used. This potential problem was addressed, in part, by making the study longitudinal and by varying the format between all independent and dependent variables (paper and pencil versus computer surveys). In comparison, Maurer, Weiss and Barbeite (2003) dealt with similar problems in testing their model with only the former. All of their surveys were written and self-report, but they administered their final phase one year after the first surveys had been completed. The smaller time difference between administrations in the present study (three months vs. one year) was an additional reason for also varying the format. It was an extra precaution against mono-method bias, especially response biases. The only test that was performed where an IV and a DV were administered at the same time and in the same format was for Hypothesis 1. As outcome expectations and intentions did not have a significant relationship, response bias cannot be considered a problem.

Another limitation of this study involved the restricted sample used. All participants were not only employees at a learning institution, they were all currently engaged in development. They also had a high average level of education, as 33% of the general population does not hold a graduate degree. The relations observed among this limited select sample may not be indicative of the relations between variables in the model that may exist in a broader selection of working environments. In addition, the work environment for continuous learning for this sample was not measured. If this

environment was unusually supportive for all employees because of the higher education setting, and their higher previous education, all observed relations between antecedents and outcome expectations may actually be the product of interactions with this unmeasured variable and not necessarily indicative of the zero-order correlations. Future testing of the model should include measurement of the work continuous learning environment. More future research recommendations are provided below.

This last example addresses another limitation of the present study. Although intended to test propositions from the CED model, the present study does not test any of the interactions proposed to exist in the series of connections between variables. The SEM analyses allow multiple variables and independent-dependent variable relationships to be tested simultaneously, but personal work environment was not included, for example. Thus, the moderated relationship between outcome expectations and intentions, as proposed by the CED model, was not observed.

An additional problem with the restricted sample exists in the further attrition of participants over the course of the longitudinal study. This is a problem of compounded restricted samples. Not only did the sample consist of volunteers, who differ from the general population and non-volunteers in predictable ways (c.f. Griffith & Walker, 1976), but these volunteers were from a restricted sample of employees at the educational institutions, those taking development classes. The final sample used for testing the CED model is further restricted to those employees who responded to all three requests for participation. Given the specific methods of this study, additional characteristics may also be different in this further restricted sample. For instance, they may be more likely to own or frequently use a computer, be less intimidated by computer technology, have

more spare time at work or at home, etc. Therefore, the present study consists of a restricted sample of employees who are self-selected from an already restricted sample of higher education institution employees which necessarily limits the generalizations that can be made and emphasizes the need for cross-validation. The problem with drawing conclusions for development recommendations on the basis of such restricted samples has been further discussed by other authors (c.f., Bobrowski, Marx & Fishman, 2001).

A final limitation concerns the low test-retest reliability scores observed for the two new scales outcome expectations and work related implicit theory. Whether this was due to poor scale items, the three month delay in administration, or is indicative of the general stability of these constructs is a question that future research can address. For instance, the low score for work related implicit theory may indicate that this variable is more state than trait, with consequences for the interventions this variable can be used in (i.e. training but not selection). Previous findings do indicate some degree of malleability for this variable (Craig, 2003, Heslin et al, 2003).

FUTURE RESEARCH

If this study is a first step in testing whether the CED model is a good representation of employees' motivations to engage in development, then the next step, given the restrictions in the present sample noted above, is to validate the present findings with a new broader sample. This retesting can also examine the recommended changes to the model noted in Figure 16. It should also include other variables from the CED model that were not measured, but that may be important moderators or test the relative contributions of variables.

The consequences of the use of the restricted sample for the present study were evident in the skewed distribution of the learning goal orientation and attitudes scales. They were also directly observable in the high average level of education in the sample. The extent to which these affected the other observed relations is not known but a broader sample, with greater variability, should have the effect of strengthening the relationships between variables in the CED model, if the model is correct. Thus, retesting with a broader sample could help answer whether the recommended changes to the CED model were advantageous and may yield more significant results than the present study.

Testing with more variables at once, especially organization learning environment and personal non-work environment, may also yield not only new findings, but also different findings on the relationships currently tested. The CED model proposes that these variables affect the factors and relations measured in the present study, therefore, their incorporation may yield very different results than the present study was able to

show. They should also help test the relative contribution of variables in the model, for instance, personal characteristics versus the organizational learning environment.

Mohr (2003) has even suggested that a positive interaction between an individual's continuous learning tendencies and organizational learning environment could exist. Mohr measured job attitudes and performance and found both variables contributed to their prediction.

The proposed role of appraisal, because it is one of the novel contributions of the model to the literature, should also be a part of any future testing. Scales need to be developed that reflect the construct as defined above. Recommendations regarding scale construction are also provided in Garofano and Salas (2005). Until testing includes this variable, it is only testing of a static model of employee development, not whether the model can be used to describe ongoing or continuous development.

Further analyses of the scales used to measure work related implicit theory and outcome expectations in the present study could also be performed, including factor analyses and other item analyses, and re-analyses of the stability of these scales. The questions on the implicit theory scale were highly similar but those on the outcome expectations scale were created to encompass a wide variety of different development behaviors. Items may cluster based on content or on effort required. These clusters may additionally have differential relations with other variables in the model, providing useful clues to motivating different kinds of behaviors.

Re-analysis of the stability of the outcome expectation and work related implicit theory scales is necessary to determine if the low observed test-retest reliability of these scales was due to the three month time delay in administration, the fluctuations of related

but unmeasured variables from the model, or if it is indicative of the extent to which these variables are trait or state-like in nature. To the extent that these variables represent states, they cannot be used in selection panels for new employees and to the extent they are traits they not good candidates for training.

FINAL COMMENTS

Employees enter the work environment of a company with unique prior experiences, attitudes, and skills. If these influence the amount and extent of subsequent and continuing employee-related development activity, then an understanding of these factors, and their interaction with any work environment or other important factors, is key to encouraging this behavior. Encouraging this behavior is important if companies want to be flexible, responsive, and competitive, that is, learning organizations (Senge, 1990). The CED model is a published depiction of the factors believed to be involved in the motivation process of continuous employee development. The present study was a first attempt at testing this model that used working adults and a longitudinal design. The study's findings suggest changes to the CED model, like the inclusion of both attitude towards development and outcome expectations as mediators, and support many of the model's propositions. For example, work-related implicit theory was supported as an antecedent that contributed, over and above the conceptually similar variable work domain learning goal orientation, to the model.

Though cross-validation of the present findings were suggested above, this study still provides important recommendations. Measuring and designing interventions to maintain both positive attitudes towards development and outcome expectations should maximize the likelihood of employees engaging in development behavior. As well, training design should ensure that employees believe that they can change their knowledge or skills in order to ensure training efficacy.

This study demonstrated the complexity of this motivation process and thus provides an important first step in understanding continuous employee development motivation. It also reveals the extent of the task remaining in creating a better understanding of this motivation for companies and educators, who may also play an important role in shaping the workforce of tomorrow (Garofano & Salas, 2005).

APPENDIX A: PROPOSITIONS FROM THE CONTINUOUS EMPLOYEE
DEVELOPMENT MODEL

Proposition

1. Outcome expectations for engaging in employee development behavior are positively related to employees' intentions to engage in development behavior.
2. Employees' intentions to engage in development behavior are positively related to actual development behavior.
3. The positive relationship between outcome expectations and intention to engage in development activities is moderated by an individual's personal environment. The relationship is made weaker when less resources are available for engaging in employee development behavior.
4. The relationship between an individual's perceived career stage and outcome expectations will be stronger than the relationship between age and outcome expectations.
5. Employees with high occupational self-efficacy will have greater outcome

- expectations for engaging in development activities.
6. Employees with high work-domain learning orientation will have greater outcome expectations than employees with low work-domain learning orientation for engaging in development activities.
 7. Employees with higher incremental implicit theory scores will have greater outcome expectations for engaging in development activities.
 8. Employees higher in work centrality will have greater outcome expectations for engaging in development activities.
 9. Employees high in career exploration will have greater outcome expectations for engaging in development activities.
 10. An organizational environment that supports engaging in development activities will create higher work centrality, career exploration, and work-related self-efficacy, learning goal orientation, and incremental implicit theory, as well as directly increase

employees' outcome expectations for engaging in development activities.

11. Positive or negative changes in the local and/or global economic environment can have corresponding effects on work centrality, career exploration, work-related self-efficacy, and work-related learning goal orientation. These positive or negative changes also have corresponding effects on employees' outcome expectations for engaging in development activities both directly and indirectly through variables like implicit theory.
12. Employees with previous work experiences where their development activities were perceived as resulting in valent rewards will have higher work-related self-efficacy, learning orientation, incremental implicit theory, and work centrality and career exploration.
13. Positive appraisals, on the part of the employee or important others, of the outcomes of engaging in development

behaviors will cause higher outcome expectations for engaging in further development activities. This appraisal then becomes a part of an employee's previous work experiences.

14. Implicit theory will moderate employees' appraisal of the outcomes of development behavior. Entity theorists will have lower appraisals of the outcomes of engaging in development.
15. Goal orientation will moderate employee's appraisal of the outcomes of development behavior. Employees with higher learning orientation will have higher appraisals of the outcomes of engaging in employee development.

APPENDIX B: STUDY SCALES

Time 1: in class, via paper and pencil

- Demographics questionnaire *
- Occupational Self-efficacy Scale
- Work Domain Learning Goal Orientation Scale
- Implicit Theory
- Work-Related Implicit Theory *
- Work Locus of Control

Time 2: by email, filled out on computer

- Outcome Expectations Scale *
- Attitude Towards Career Development
- Intention to Participate in Development Activities

Time 3: by printed email, via paper and pencil

- Participation in Development Activities
- Work-Related Implicit Theory (re-administration)
- Outcome Expectations (re-administration)

* included below

Background Information

Please answer the following questions.

1. What is your present position (**CHECK one only**)

- Faculty
- Senior Administration
- Middle Manager (i.e., supervisors/mgrs report to you)
- Supervisor
- Technical Employee
- Professional
- Clerical
- Service or Maintenance
- Other (please specify) _____

2. Gender: Female Male

3. Race:

- Hispanic
- African American
- Caucasian
- Native American
- Asian
- Other

4. Age _____

5. Number of years employed by the University _____

6. Number of years performing the same/similar duties for any employer _____

7. Total number of years work experience _____

8. Education (**CHECK all those that apply**)

- Some High School
- High School Degree
- Technical School Degree
- Some College/Associates Degree
- College Degree (bachelors)
- Some Graduate School
- Graduate Degree
- Other (please specify) _____

9. Have you attended professional development (i.e., training, faculty development, etc.) workshops offered at UCF?

_____ Yes _____ No

If you answered yes to #9:

10. How many workshops did you attend? _____

11. Please circle the number that best represents the extent to which you are taking a training class from the UCF HR department because you want to or because you were told to.

1 -----	2 -----	3 -----	4 -----	5 -----	6 -----	7 -----
Completely non- voluntary	Mostly non- voluntary	Somewhat non- voluntary	Neither voluntary nor non- voluntary	Somewhat voluntary	Mostly voluntary	Completely voluntary

THANK YOU FOR YOUR INPUT!

WORK-RELATED IMPLICIT THEORY

Instructions. Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements by writing the number that corresponds to your opinion next to each statement.

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 ----- 7
Strongly Mostly Somewhat Neither Somewhat Mostly Strongly
disagree disagree disagree agree nor agree agree agree
disagree

1. You can do things differently at work, but your employment-related abilities can't really be changed. _____
2. How well you can do at your job is something very basic about you and can't be changed very much. _____
3. Everyone, no matter who they are, can significantly change their employment-related abilities. _____
4. As much as you hate to admit it, you can't teach an old dog new tricks. You can't really change your employment-related abilities. _____
5. You have certain employment-related abilities, and there is not much that can be done to really change them. _____
6. People can always substantially change their employment-related abilities. _____
7. No matter what employment-related abilities a person has, they can always change them a lot. _____
8. You can change any employment-related ability. _____

OUTCOME EXPECTATIONS SCALE

Instructions: For each of the following learning/development activities, please choose the number that best indicates how strongly you do or do not believe that a positive outcome would result from performing that activity. There are no correct answers. Please answer honestly, this survey will be used for research purposes only.

1 -----	2 -----	3 -----	4 -----	5 -----	6 -----	7 -----
Strongly do not believe	Mostly do not believe	Somewhat do not believe	Not sure	Somewhat believe	Mostly believe	Strongly believe

How strongly do you believe or not believe that a positive outcome would result from:

1. Taking a one time training class from the university. _____
2. Taking an ongoing training class from the university. _____
3. Taking a course on the university's internal computer network. _____
4. Taking a course using computer software from the university. _____
5. Taking a home-study course from the university. This could be readings or workbooks. _____
6. Getting on-the-job training for work skills or abilities. _____
7. Taking a one-time training class from another organization or school. _____
8. Taking an ongoing training class from another organization or school. _____
9. Working towards a college degree. _____
10. Working towards a non-college degree or certificate. _____
11. Working towards work-related certification. _____

12. Purchasing a job-related computer training program. _____
13. Purchasing a job-related training book. _____
14. Being in a formal mentoring relationship, for instance, one started by the university. _____
15. Being in a mentoring relationship not started by the university. _____
16. Talking with other workers to learn about my job or another job. _____
17. Learning the skills or duties of other similar jobs. _____
18. Taking on new skills or duties while still doing my current job. _____
19. Seeking new assignments or duties. _____
20. Joining or maintaining membership in a professional association for people in my occupation. _____
21. Reading trade or academic publications. _____
22. Reading work-related books or magazines. _____
23. Visiting web sites or surfing the net to learn about my job or another job. _____
24. Attending work-related conferences. _____
25. Attending job-related meetings (for example, a luncheon). _____
26. Seeking formal job feedback (for example, assessments or performance reviews). _____
27. Seeking informal job feedback (for example, discuss with _____

manager or co-worker).

28. Talking with a professional about my employment-related
future (for example, human resources).

29. Reading a book or magazine for guidance on my future.

30. Going to job fairs.

31. Volunteering for activities that make me a better worker (for
example, coaching or charity work).

APPENDIX C: POWER ANALYSES

To determine the number of participants needed for testing the hypotheses, three varieties of power analyses were performed. Results converged to suggest that approximately 200 participants should provide sufficient power to detect effects.

The first kind of power analysis involved the determination of sample size (N) needed, given an expected effect size, for analyses using regression equations, in order for the test to have enough power to detect a given effect size (Cohen, Cohen, West & Aiken, 2003). The effect sizes provided by Maurer and his colleagues (2003) were used as an estimate of expected effect size given that their study involved testing a model that is the most comparable in the literature to the continuous employee development model. An average effect size was calculated using their published effect sizes between variables that bore the most similarity to the variables tested in the present study. The formula used was:

$$N = (L / f^2) + k + 1$$

where k is the number of variables in the regression equation, and f^2 is the effect size. The average effect size calculated from Maurer's study was 0.1. L is a value from tables provided by Cohen, Cohen, West and Aiken (2003) based on the number of variables, desired power (e.g., 0.8), chosen *alpha* level (.05), and k . To be conservative, at the most, three variables will be used in a regression equation to test the above hypotheses (Hypothesis 9). This formula therefore reveals that for a power level of 0.8, 111 participants are needed. For power of 0.9, 146 participants are needed.

Pedhauzer (1997) also gives ratio recommendations on the number of participants that should be used in a study with a given number of variables. He suggests ratios of fifteen or thirty participants per variable. Again, to be conservative, the greatest number

of variables that will be tested at once for any of the hypotheses is seven (e.g., Hypothesis 4B). Therefore, between 105 and 210 participants are needed.

A third set of analyses is also relevant, though, because this testing involves the validation of two new scales. Ratio recommendations for the number of participants needed per item, especially when factor analyses are to be performed, are given by Gorsuch (1983) and Nunnally and Bernstein (1994). Nunnally and Bernstein offer the conservative recommendation that 10 participants be used per item in validation studies. This recommendation is given to ensure that a reliable and stable factor structure can be seen. However, Gorsuch has suggested that ratios closer to five participants per item may be sufficient in cases where there is an expectation of only a single factor. As this is the case in the present proposed studies, Gorsuch's (1983) recommendations will be followed over Nunnally's. To be conservative while using Gorsuch's ratios, the items from the two new scales will be added. The work-related implicit theory scale and the outcome expectations scale have 39 items together. Therefore, 195 participants are needed.

APPENDIX D: IRB APPROVAL



Office of Research & Commercialization

December 19, 2005

Christina Garofano
University of Central Florida
Institute for Simulation & Training
3280 Progress Drive
Orlando, FL 32816-0544

Dear Ms. Garofano:

With reference to your protocol #05-3109 entitled, "**What Influences Continuous Employee Development Decisions?**" I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office. **This study was approved on 12/19/05. The expiration date will be 12/18/06.** Should there be a need to extend this study, a Continuing Review form must be submitted to the IRB Office for review by the Chairman or full IRB at least one month prior to the expiration date. This is the responsibility of the investigator. **Please notify the IRB office when you have completed this research study.**

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board through use of the Addendum/Modification Request form. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur.

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Barbara Ward
Barbara Ward, CIM
UCF IRB Coordinator
(FWA00000351, IRB00001138)

Copies: IRB File
Eduardo Salas, Ph.D.

BW:jm

12443 Research Parkway • Suite 302 • Orlando, FL 32826-3252 • 407-823-3778 • Fax 407-823-3299

An Equal Opportunity and Affirmative Action Institution



THE UNIVERSITY OF CENTRAL FLORIDA
INSTITUTIONAL REVIEW BOARD (IRB)

IRB Committee Approval Form

PRINCIPAL INVESTIGATOR(S): Christina Garofano IRB #: 05-3109
(Supervisor: Eduardo Salas, Ph.D.)

PROJECT TITLE: What Influences Continuous Employee Development Decisions?

- New project submission Resubmission of lapsed project # _____
- Continuing review of lapsed project # _____ Continuing review of # 2277
- Study expires 12/25/05 Initial submission was approved by expedited review
- Initial submission was approved by full board review, but continuing review can be expedited
- Suspension of enrollment email sent to PI, entered on spreadsheet, administration notified _____

Chair

Expedited Approval

Dated: Dec. 19, 2005
Cite how qualifies for expedited review: minimal risk and #7

Exempt

Dated: _____
Cite how qualifies for exempt status: minimal risk and _____

Expiration
Date: Dec. 18, 2006

IRB Reviewers:

Signed: 
Dr. Sophia Dziegielewski, Vice-Chair

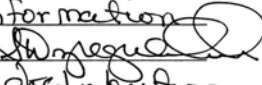
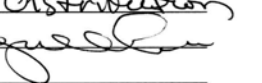
Signed: _____
Dr. Jacqueline Byers, Chair

Signed: _____
Dr. Tracy Dietz, Designated Reviewer

Complete reverse side of expedited or exempt form

- Waiver of documentation of consent approved
- Waiver of consent approved
- Waiver of HIPAA Authorization approved

NOTES FROM IRB CHAIR (IF APPLICABLE): _____

Please add UCF contact information to the consent form as some sensitive information is being gathered on the scale. 
Clarify whether prizes and prize distribution is the same. 12/14/2005 

APPENDIX E: TABLES

Table 1

Descriptive Data for All Study Variables: Means, Standard Deviations, Tests for Normality

Scale	N	Mean	Std. Deviation	Skewness	Kurtosis
1.General Implicit Theory	473	5.17	1.32	-.74	0
2.Goal Orientation	474	6.27	.77	-2.2	9.9
3.Transposed GO	474	.21	.17	.49	-.08
4.Self-Efficacy	474	5.98	.53	-.31	.37
5.Locus of Control	474	3.06	.49	.04	0
6.Work Implicit Theory	471	5.71	.88	-.6	.13
7.Outcome Expectations	306	5.47	.64	-.14	-.1
8.Attitude	305	6.19	.69	-.88	.57
9.Transposed Attitude	305	.23	.16	.16	-.9
10.Intention	305	2.19	1.16	.98	.72
11.Participation	227	1.67	1.06	1	.42

Table 2

Correlations Between Study all Variables with Time of Administration Indicated

Scale	Time of Administration										
	1			2					3		
	1	2	3	4	5	6	7	8	9	10	11
1.General Implicit Theory	-	.12*	.16*	.09*	.23*	.41*	.06	.10	.12*	.10	.04
2.Goal Orientation		-	.96*	.38*	.16*	.28*	.19*	.43*	.44*	.19*	.15*
3.Transposed GO			-	.45*	.21*	.35*	.21*	.45*	.46*	.21*	.18*
4.Self-Efficacy				-	.25*	.23*	.27*	.27*	.30*	.12*	.20*
5.Locus of Control					-	.45*	.15*	.20*	.21*	.04	.00
6.Work Implicit Theory						-	.24*	.31*	.31*	.06	.01
7.Outcome Expectations							-	.45*	.45*	.11	.21*
8.Attitude								-	.98*	.20*	.17*
9.Transposed Attitude									-	.21*	.18*
10.Intention										-	.32*
11.Participation											-

Note: Time 1 N's = 470-474; Time 2 N's = 304-305; Time 3 N's = 222-227

* Correlation is significant at the .05 level (two-tailed).

Table 3

Summary of results for all hypotheses

H#	H ₁	Type of Hypothesis	Finding	Result
1	$\rho_{OE,I} > 0$	Correlational test of model	$r = 0.109$, $N = 305$, $p = .056$	Not supported
2	$\rho_{OE,I} > \rho_{OE,DB}$	Correlational test of model	$r = 0.109 < r = 0.213$, $N = 223$	Not supported
3	$\rho_{OE,I} > \rho_{A,I}$	Correlational test of model	$r = 0.109 < r = 0.448$, $N = 305$	Not supported
4a	Model 1 > Model 4	SEM test of model	Model 1 < Model 4 on all 4 fit indices	Not supported
4b	Model 7 better than Model 7.2	SEM test of model	X^2 difference = 8.622; $df = 4$; $X^2_{crit} = 9.49$, n.s. PNFI better for 7.2 RMSEA, CFI. AIC better for 7	Supported
5	$\rho_{SE,OE} > 0$	Correlational test of model	$r = 0.268$, $N = 305$, $p < .001$	Supported
6	$\rho_{WI,OE} > 0$	Correlational test of model	$r = 0.237$, $N = 305$, $p < .001$	Supported
7	$\rho_{GO,OE} > 0$	Correlational test of model	$r = 0.208$, $N = 305$, $p < .001$	Supported
8	$\rho_{WI,OE} > \rho_{GI,OE}$	Correlational test of WI	$r = 0.237 > r = 0.061$, $N = 305$ $t = 2.79$, $\alpha_{crit} = 1.64$	Supported
9	$sr^2_{OE,WI \cdot GO} > 0$	Regression test of WI	$\Delta R^2 = 0.027$; $p = .003$	Supported
10	$\rho_{WI,OE} > \rho_{LOC,OE}$	Correlational test of WI	$r = 0.237 > r = 0.146$, $N = 305$ $t = 1.12$, $\alpha_{crit} = 1.65$	Not supported

H#	H ₁	Type of Hypothesis	Finding	Result
11	Model 1 better than Model 3	SEM test of WI	RMSEA same CFI, PNFI, AIC better for 3 But LOC,OE path coefficient in Model 3 = -0.07, p = .311, n.s.	Supported
12	Model 6.5 better than 6	SEM test of WI	(X ² difference = 30.01; df = 4; X ² _{crit} = 9.49, significant RMSEA, CFI, AIC better for 6 But LOC,OE path coefficient in Model 6 = 0, p = 0, n.s.	Supported
13	$\rho_{SE,OE} > \rho_{SE,A}$	Correlational test of OE	r = 0.268 < r = 0.298, N = 305, 304	Not supported
14	$\rho_{WI,OE} > \rho_{WI,A}$	Correlational test of OE	r = 0.237 < r = 0.307, N = 305, 304	Not supported
15	$\rho_{GO,OE} > \rho_{GO,A}$	Correlational test of OE	r = 0.208, N = 305 < r = 0.463, N = 304	Not supported

Note: OE = Outcome Expectations, I = Intentions to Engage in Development, DB = Development Behavior, A = Attitude Toward Development, SE = Occupational Self-Efficacy, GO = Work-Domain Learning Goal Orientation, WI = Work-Related Implicit Theory, GI = General Implicit Theory, LOC = Work Locus of Control

Table 4

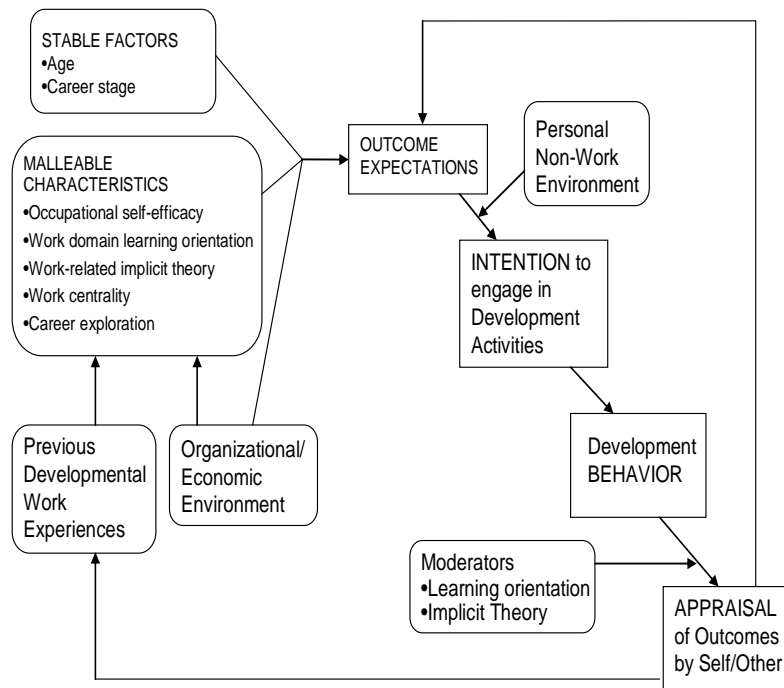
Structural Equation Modeling Fit Indices for all Tested Models

Model	Figure	Fit Indices			
		RMSEA (lower better)	CFI (higher better)	PNFI (higher Better)	AIC (lower better)
1	6	0.079	0.913	0.298	67.68
1.1	7	0.074	0.956	0.180	60.50
4	8	0.057	0.963	0.314	57.74
2	9	0.074	0.934	0.262	63.6
7	10	0.117	0.84	0.266	119.5
7.2	11	0.12	.0757	0.344	146
7.3	12	0.119	0.854	0.241	115
3	13	0.074	0.909	0.295	65.37
6	14	0.067	0.945	0.298	80.2
6.5	15	0.148	0.615	0.283	192.2

Note: RMSEA = squared error of approximation; CFI = comparative fit index; PNFI = parsimonious normal fit index; AIC = Akaike information criterion.

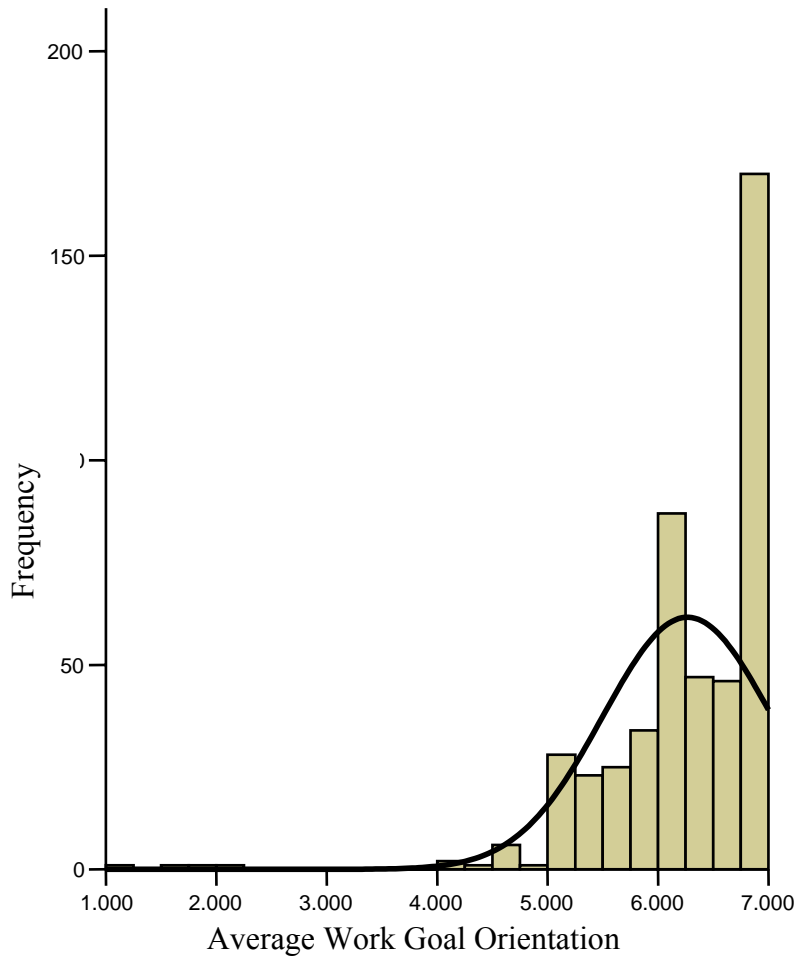
APPENDIX F: FIGURES

Figure 1



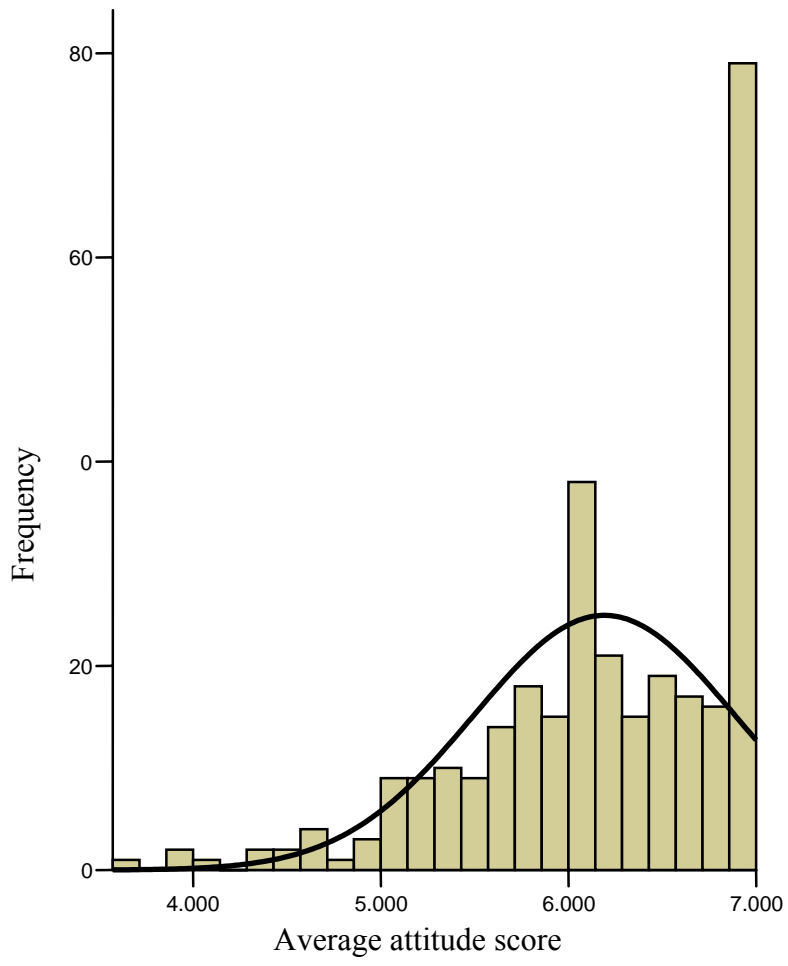
Model of continuous employee development

Figure 2



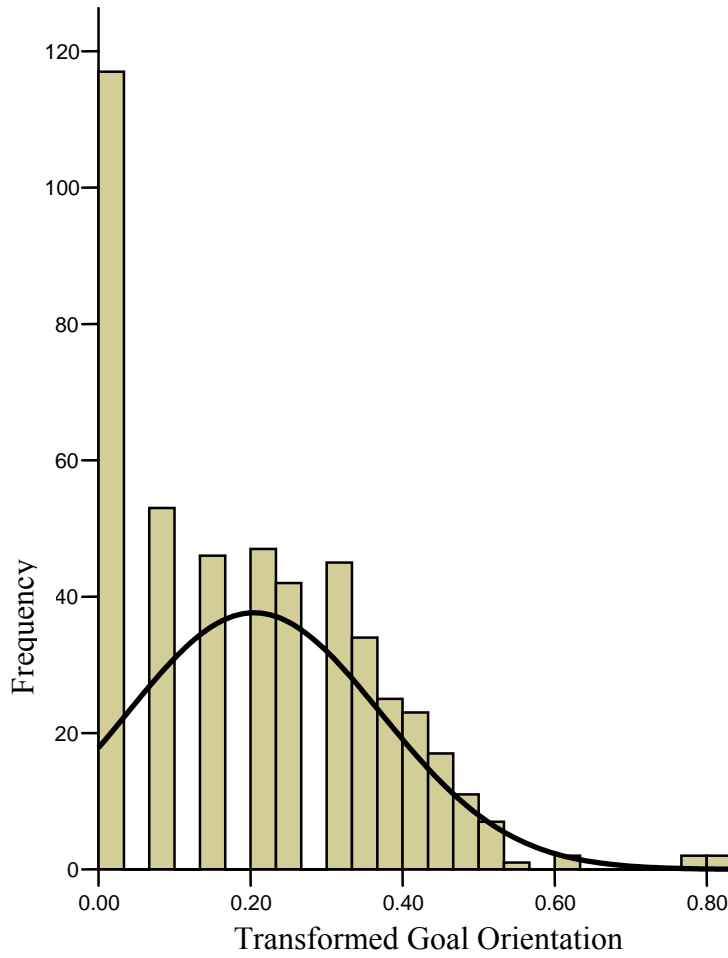
Histogram of Work Goal Orientation with normal distribution overlay

Figure 3



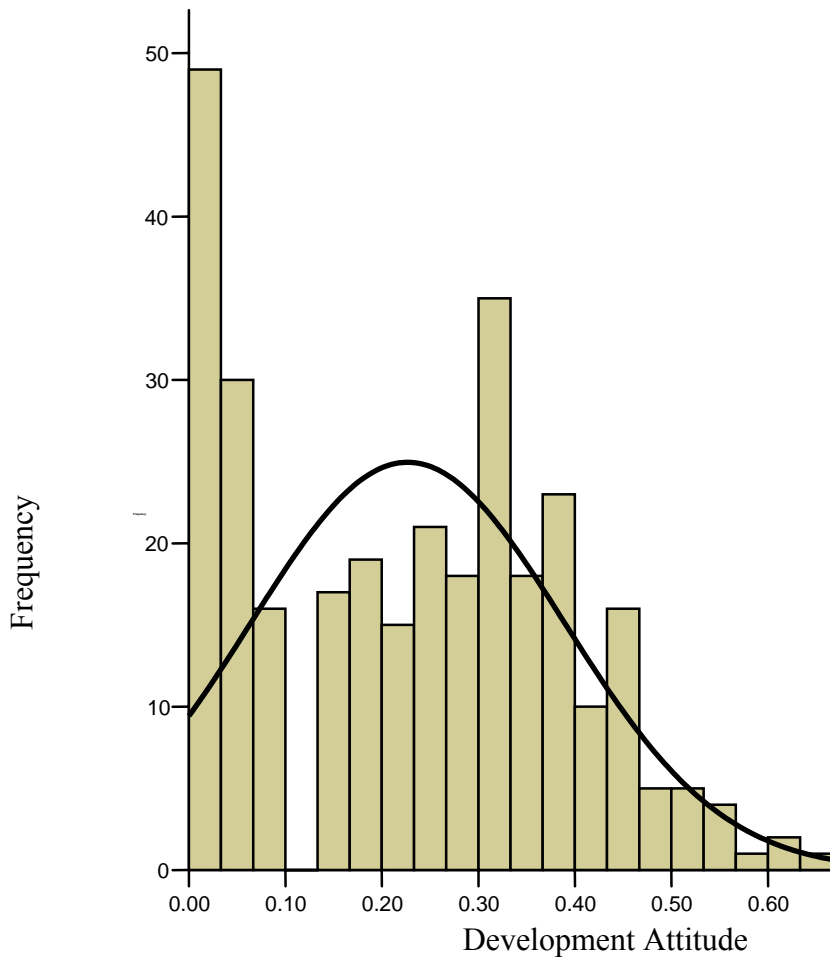
Histogram of Development Attitude with normal distribution overlay

Figure 4



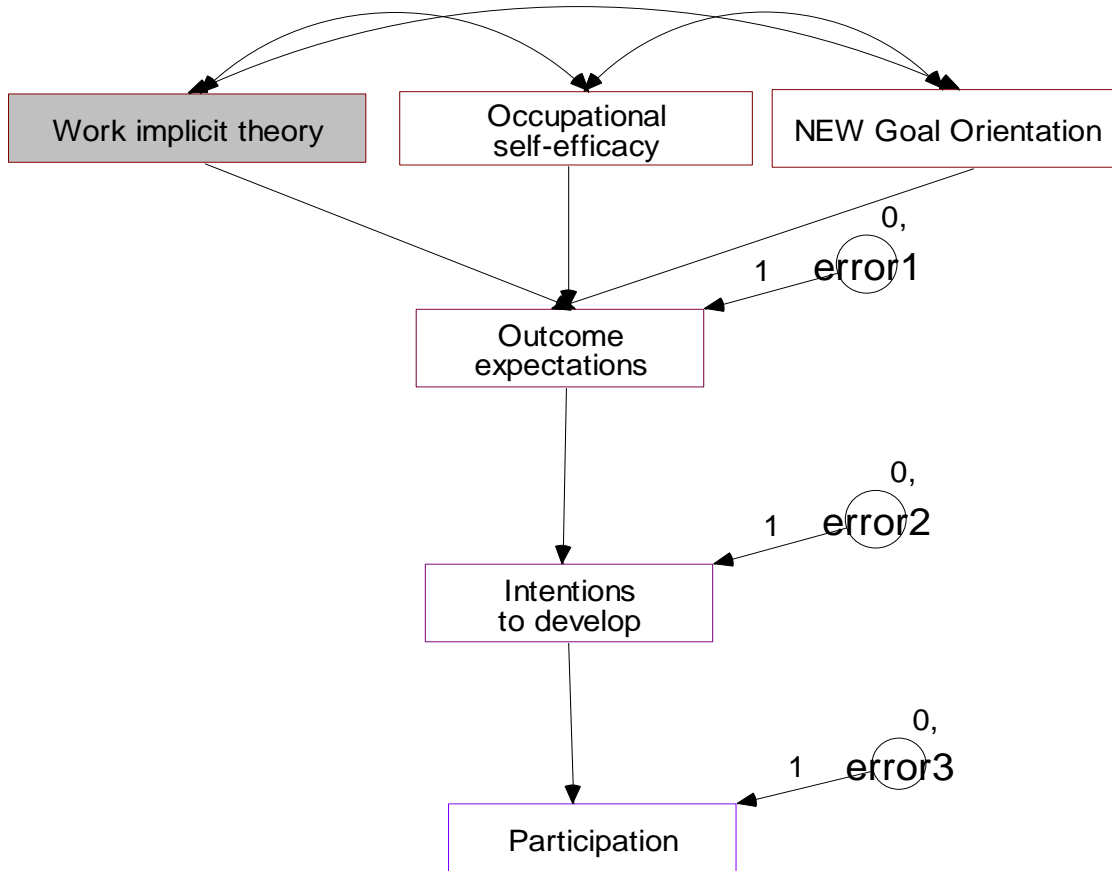
Histogram of transformed Work Goal Orientation with normal distribution overlay

Figure 5



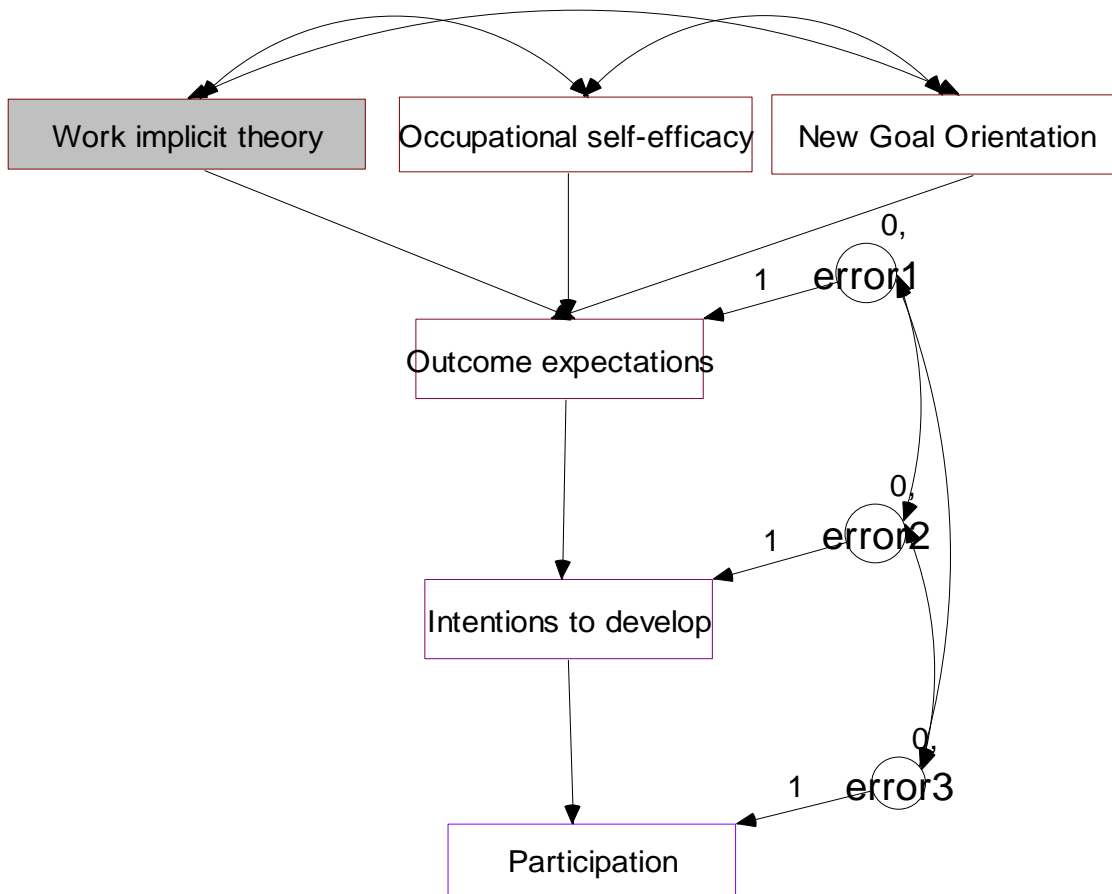
Histogram of transformed Development Attitude with normal distribution overlay

Figure 6



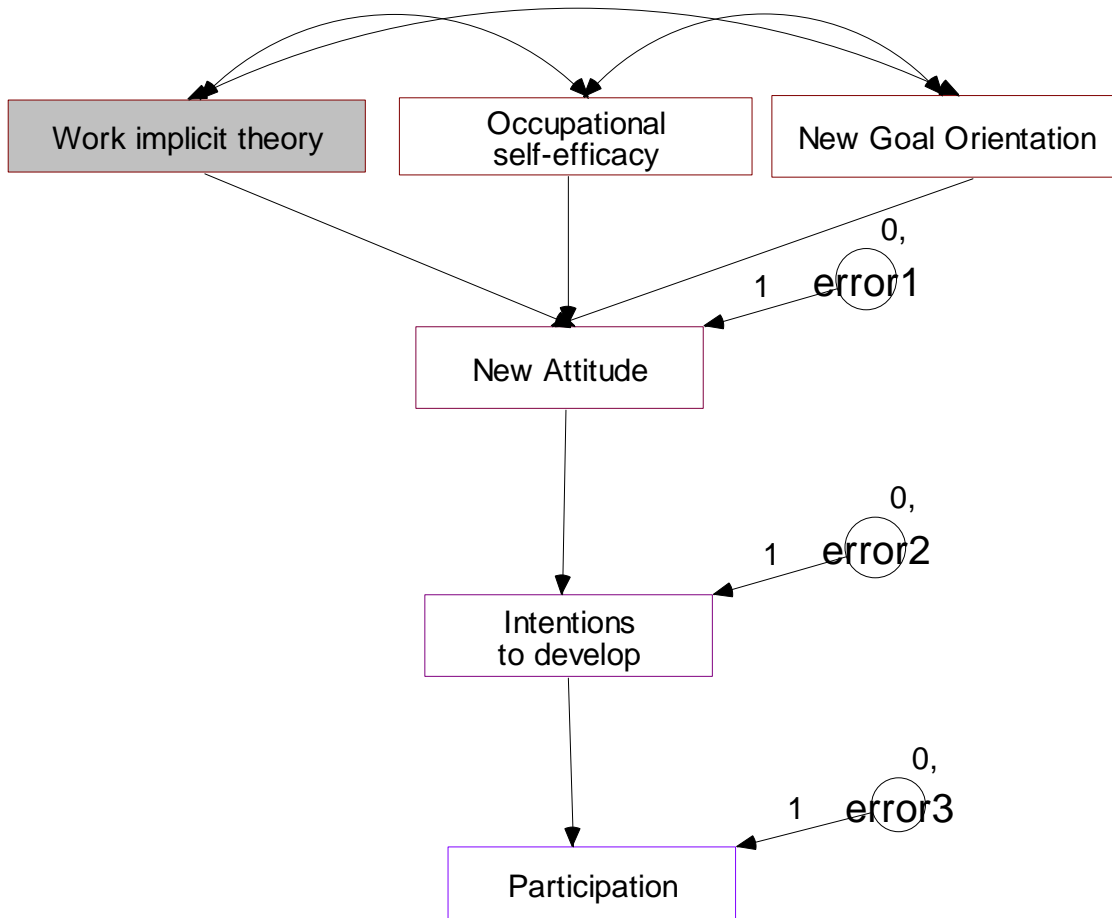
Model 1

Figure 7



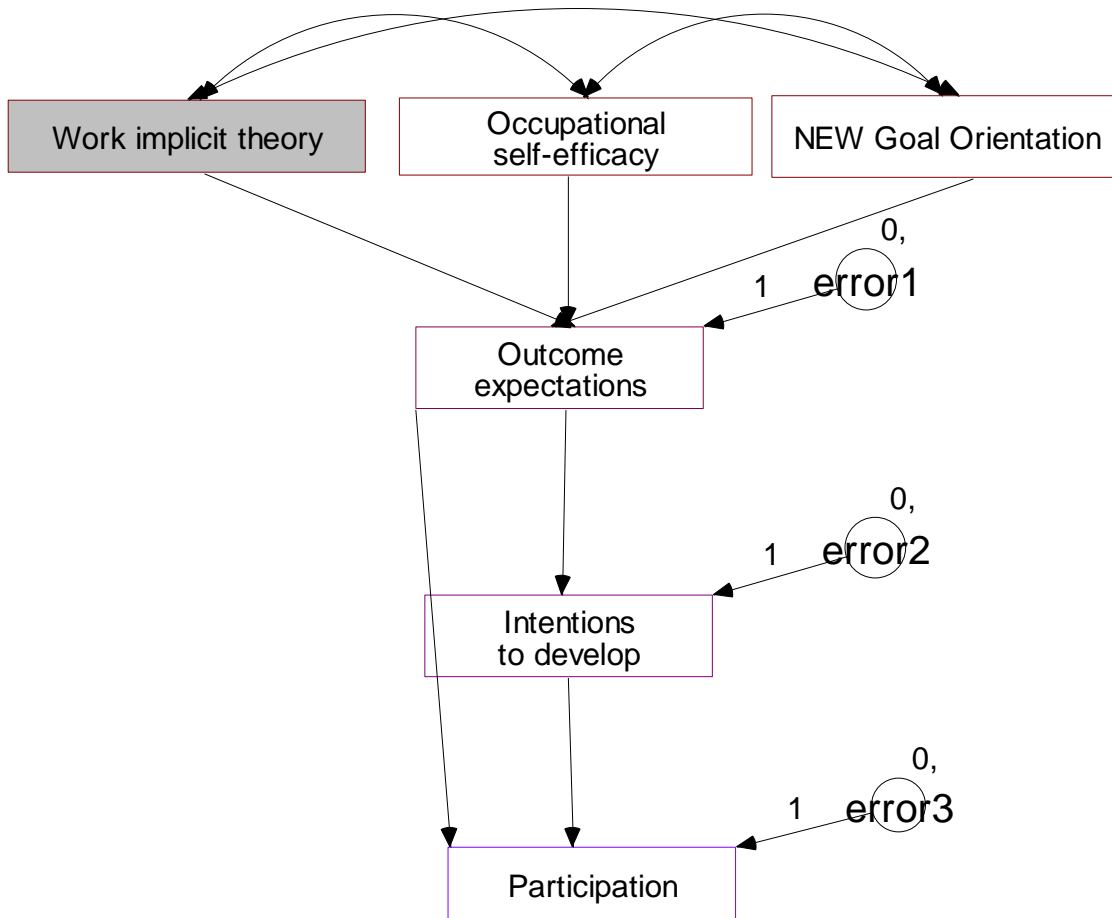
Model 1.1

Figure 8



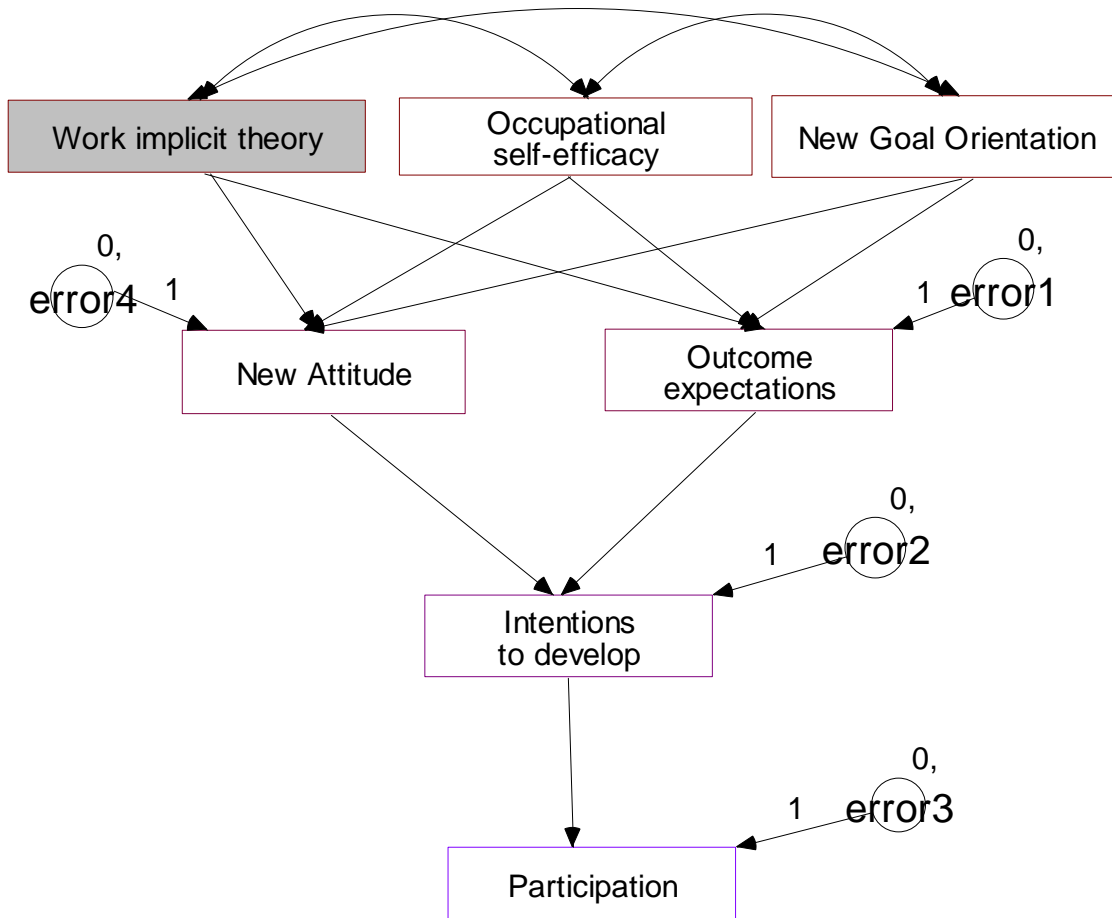
Model 4

Figure 9



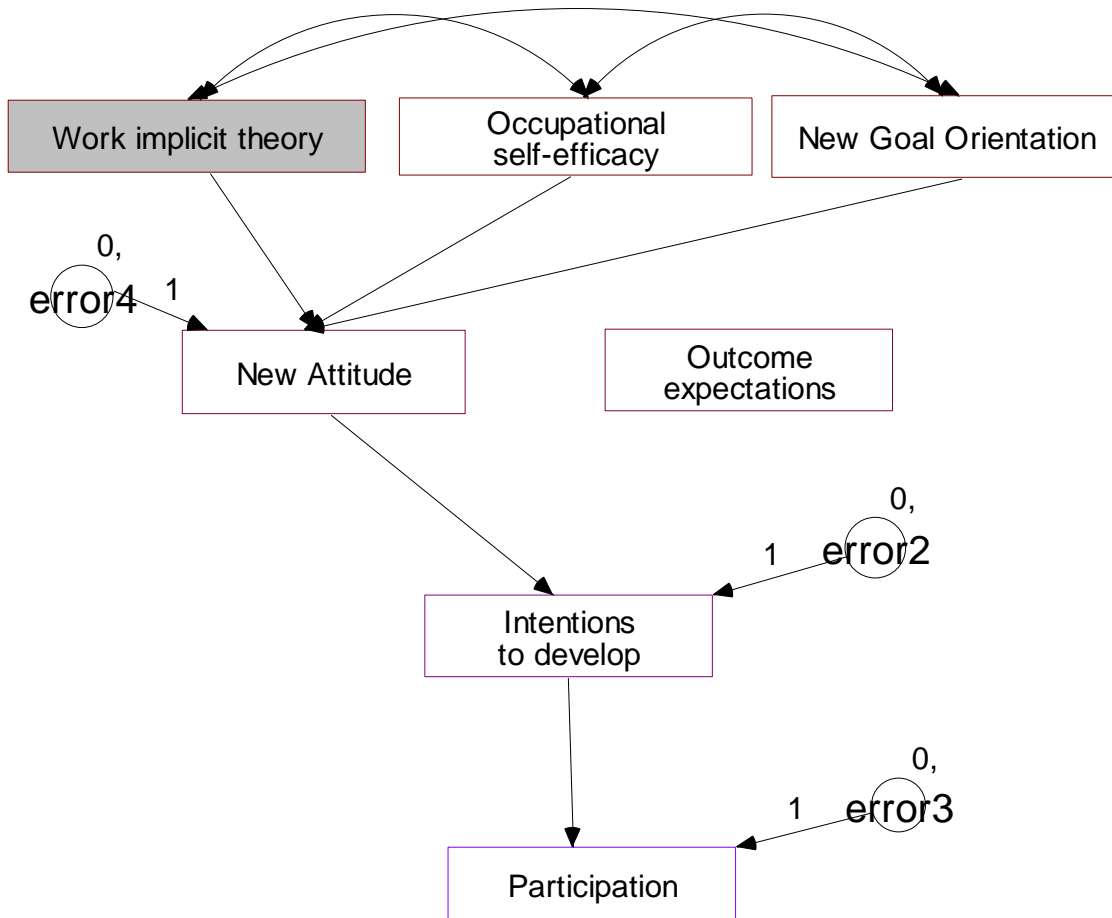
Model 2

Figure 10



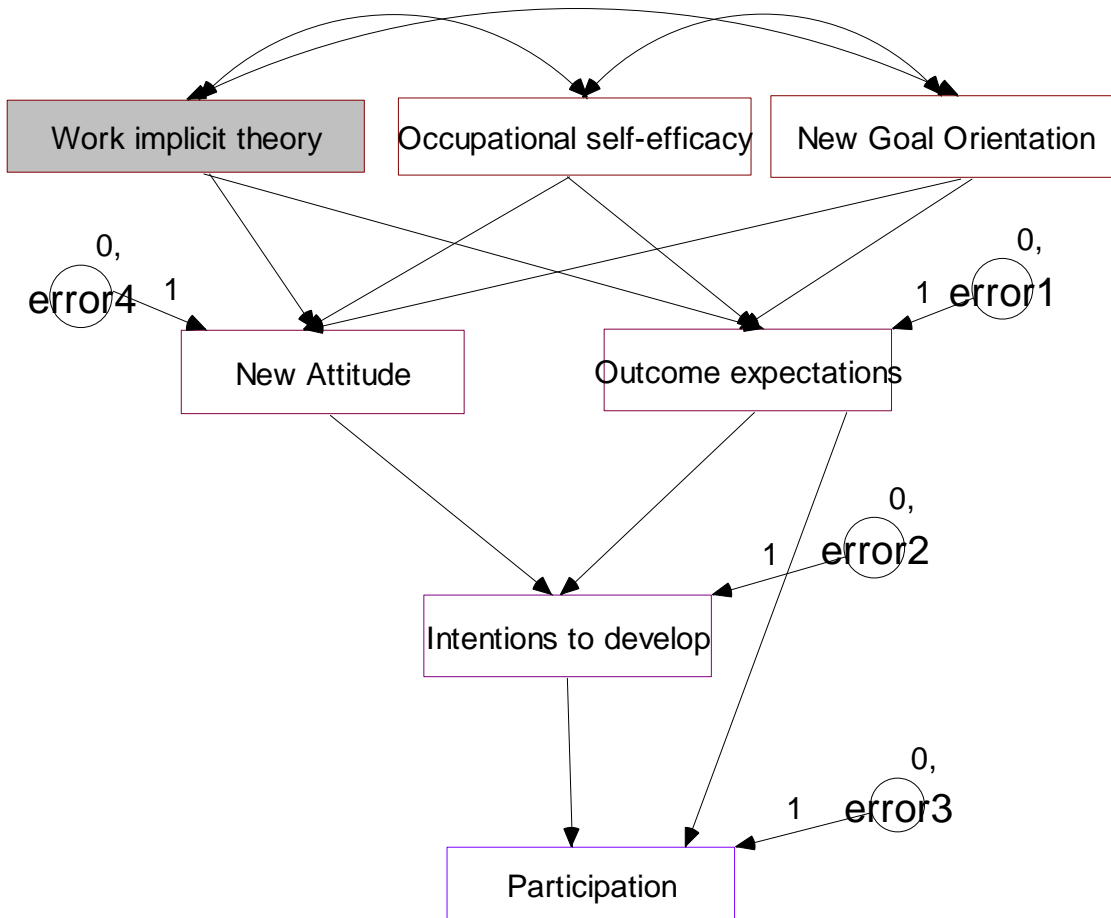
Model 7

Figure 11



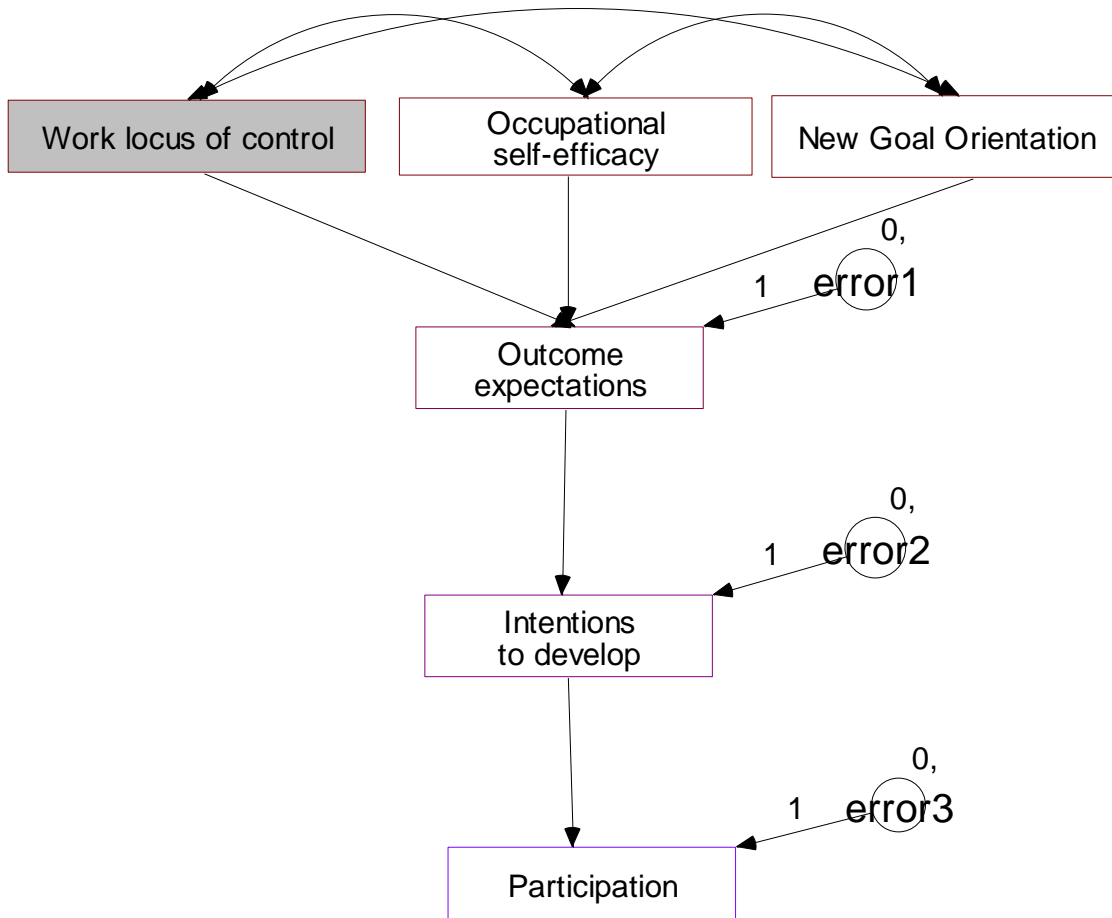
Model 7.2

Figure 12



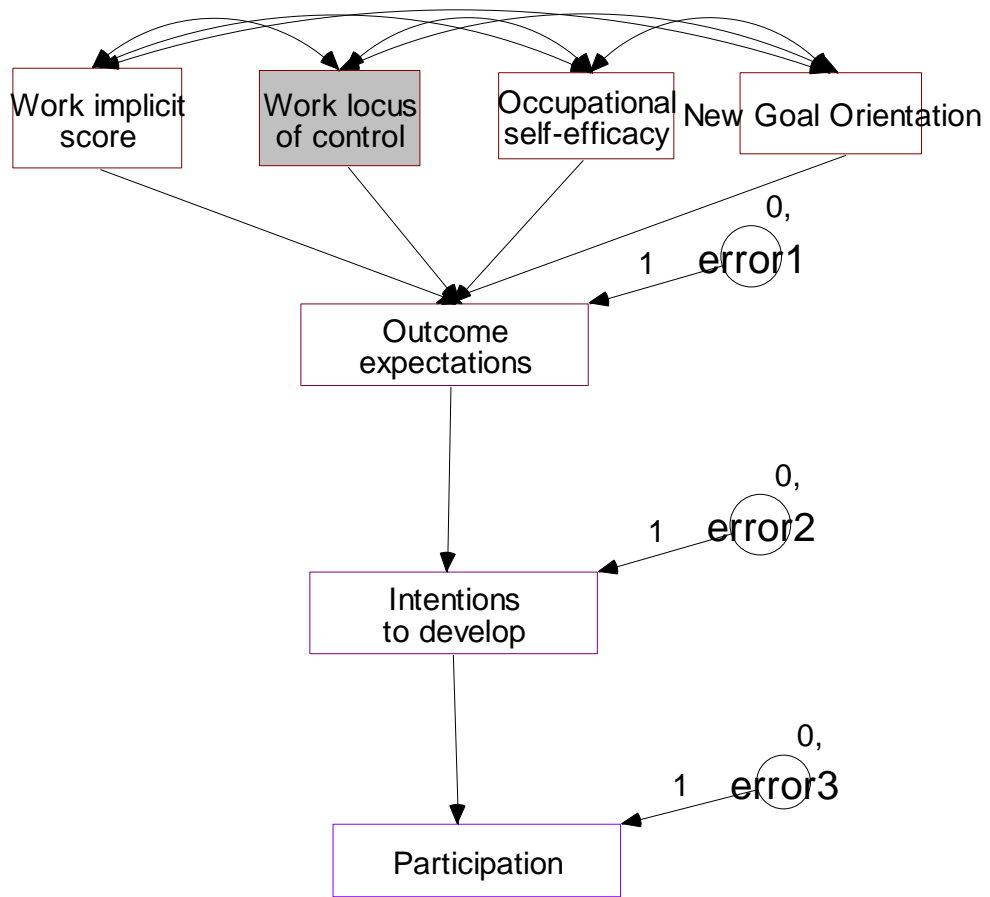
Model 7.3

Figure 13



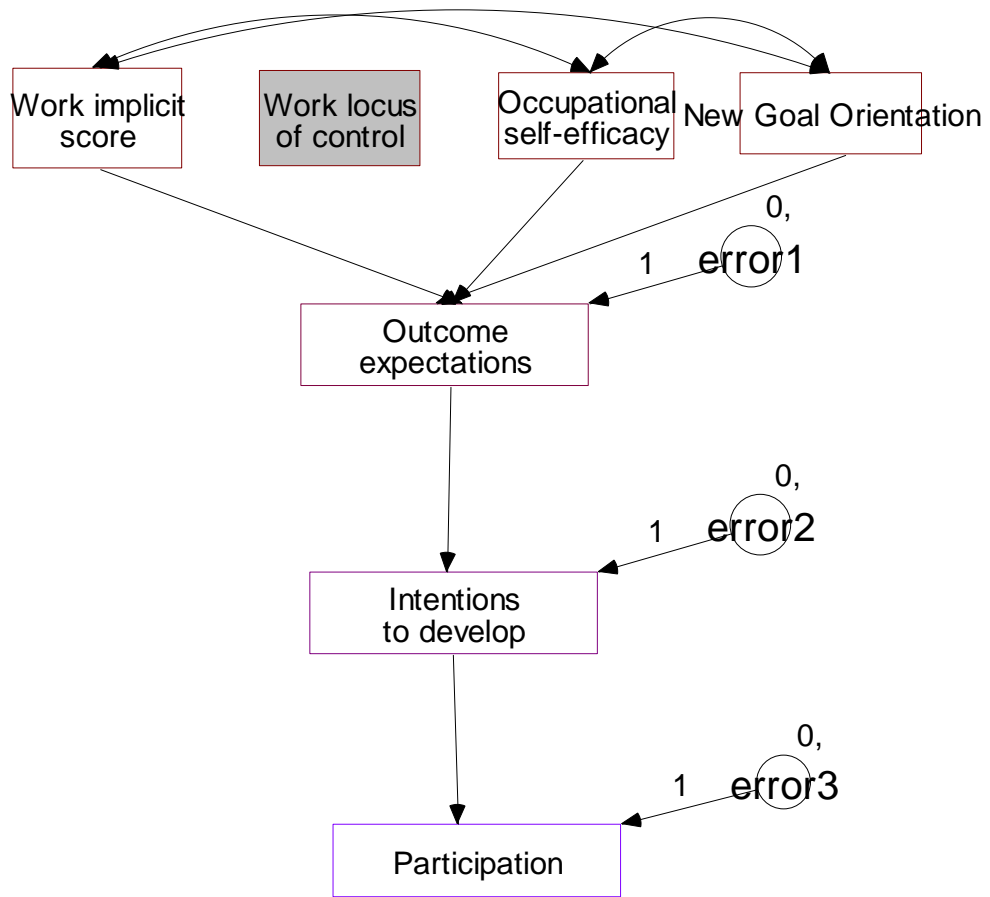
Model 3

Figure 14



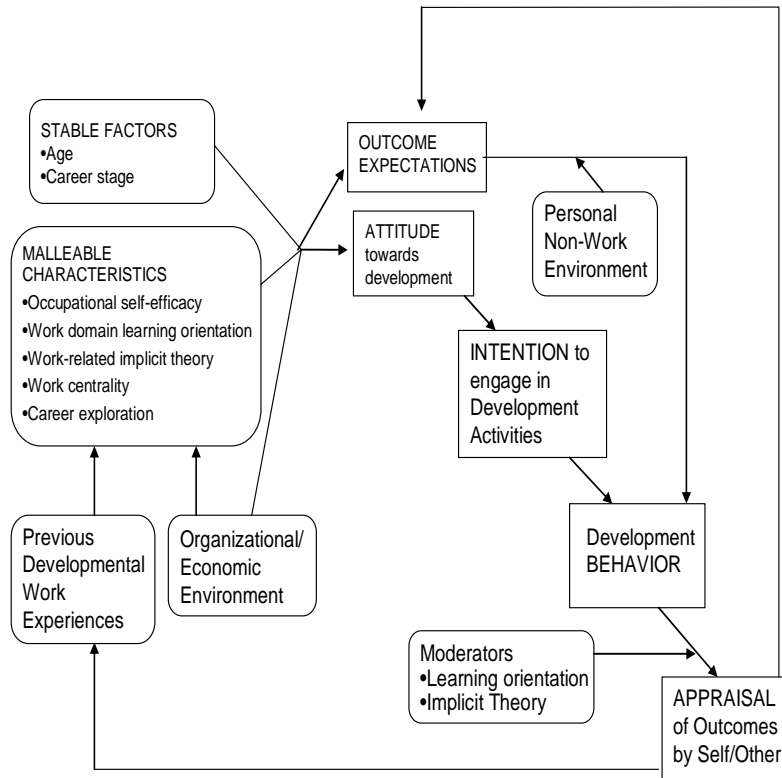
Model 6

Figure 15



Model 6.5

Figure 16



New CED Model

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