Antecedents of Informal Learning: A Study of Core Self-Evaluations and Work-Family Conflict and Their Effects on Informal Learning

Thesis

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Abstract

Informal learning is a voluntary, unplanned, yet conscious act of engaging in learning and development that may include methods such as searching the Internet or asking co-workers questions. Antecedents of informal learning have received some focus from researchers interested in discovering implications for theory and practice; however, no extensive studies looking at two variables relevant to current-issue HR management practices – Core Self-Evaluations (CSE), a construct of one’s self worth and perception of self-control, and time-based Work-Family Conflict (WFC), a type of inter-role conflict – have been examined in respect to their effect on informal learning. A survey was collected from 225 casual chain restaurant managers and analysis found significant direct effects of both Core Self-Evaluations and time-based Work Interference with Family (WIF) as well as the WIF’s moderation of CSE on informal learning. Theoretical and practical implications are covered, including recommendations for HR and general management practice as well as future research of this emerging area.
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Introduction

Informal learning has become increasingly interesting to both researchers and to HR professionals (Benson, 1997; Tannenbaum, 2010). Learning’s importance in organizations has been coupled with a need to streamline HR processes due to budget constraints and to bring employees to faster proficiency levels in complex jobs (Marsick and Watkins, 1999). Because of informal learning’s pervasive nature in organizations, little work has been done to understand the antecedents of what makes employees engage in informal learning activities. Previous research has focused on personal learning orientation and the learning environment (Doornbos, Simons, and Denessen, 2008; Choi and Jacobs, 2011), the context in which informal learning occurs (Volpe, 1999; Lohman, 2005; Ellinger, 2005), demographic factors that influence informal learning (Berg and Chyung, 2008), informal learning’s relationship with formal training programs (Leslie, Aring, and Brand, 2003), informal learning’s impact on job satisfaction (Rowden and Connie, 2005), and informal learning’s effectiveness and results (Enos, Kehrhahn, and Bell, 2003). These studies have been significant in understanding the need for, execution and results of informal learning; and,
in fact, many will inform suggestions for practical application in conjunction with this and future work. This study investigates the antecedents of informal learning, which are important to practical implications for this important, pervasive dimension of human capital development.

Tannenbaum (2010) recommends several individual personality characteristics in informal learning research. Core Self-Evaluations were chosen as the variable to look at for this study because of previous research that has shown relationships with job performance (Judge, et al., 1997; Judge, et al., 1998; Lau and Shaffer, 1999; Erez and Judge, 2001; Judge and Bono, 2001; Srivastava, et al., 2010). That is, as individuals have higher assessments of their self-esteem, self-efficacy, emotional stability (neuroticism), and locus of control, they perform better and are more satisfied at work. Because of Tannenbaum’s (2010) suggestion to look at self-esteem, self-efficacy, and locus of control in regards to their relationship with informal learning, it made conceptual sense to use CSE and its developed scale (CSES) to examine these personality characteristics and traits as one construct. On a more practical standpoint, it is also of interest to see if one’s overall assessment of self, especially those with positive CSE who see “themselves positively across a variety of situations, and approach the world in a confident, self-assured manner,” (Judge and Kammeyer-Mueller, 2011, p. 332), relates positively to informal learning.
Informal learning requires time, above and beyond what it takes to complete normal job duties, and the ability to share and use resources. The relationship between time and informal learning is noted by several researchers, including Tannenbaum (2010), Marsick and Volpe (1999), Sambrook and Stewart (2000), and Lohman (2005). This element coupled with the current HR management issue of work-life balance, in both research (Beauregard and Henry, 2009; Basuil and Casper, 2012) and popular press1, led to the consideration of time-based Work-Family Conflict as another antecedent variable to analyze.

Analysis of these antecedent variables, along with their interaction, showed several significant effects that HR researchers and practitioners should consider in their consideration and facilitation of informal learning. These findings may also help organizations design interventions in general management as well as HR management and development practices to more effectively allow employees to engage in informal learning at work.

1 A search on Forbes.com for “work life balance” yielded 3,036 results, on FastCompany.com the same search yielded 30,581 results as of April 2, 2013. While not all of these articles’ contents and message were validated, it should be clear that there is certainly not a shortage of writing and discussion of this topic in industry.
Literature Review and Research Questions

What is Informal Learning?

A number of definitions of informal learning are found in the literature. Marsick and Watkins led initial research and writing about informal learning in the early 1990s with their book *Informal and Incidental Learning in the Workplace*, which sought to describe and define informal learning (Marsick and Watkins, 1999). From that work they contributed to both popular business press and academic journals, and many researchers either adopted or at least noted their definition:

“Informal learning, a category that includes incidental learning, may occur in institutions, but it is not typically classroom-based or highly structured, and control of learning rests primarily in the hands of the learner... Informal learning can be deliberately encouraged by an organization or it can take place despite an environment not highly conducive to learning.” (Marsick and Watkins, 1990, p.121)

Marsick and Watkins (1992), further defined informal learning (from Ellinger, 2005):
“…[informal learning is] based on learning from experience; embedded in the organizational context, oriented to a focus on action; governed by non-routine conditions; concerned with tacit dimensions that must be made explicit; delimited by the nature of the task, the way in which the problems are framed, and the work capacity of the individual undertaking the task; and, enhanced by proactivity, critical reflectivity and creativity’ (p. 287)” (p. 391).

Informal learning is a broad concept of development, consisting of learning with others, self-experimentation, and external scanning (Choi and Jacobs, 2011). It is also regarded among some researchers and those in industry that informal learning provides more influential learning experiences, can be undertaken more naturally, and accounts for a significant amount of development time (Benson, 1997; Tannenbaum, et al., 2010). Informal learning is individually driven depending on need, and while it can be intentional or unintentional, it is typically unplanned, incidental, reactive, and integrated into existing daily activities (Berg and Chyung, 2008).

The Marsick and Watkins definitions of informal learning are stated in terms of a contrast to formal learning, and are also distinguished from training. Training, Marsick and Watkins contend, refers to “discrete planned
events (experiences) used to instruct people how to perform specific defined jobs” (p. 2, 1999). Others have tried to set informal learning apart from formal learning, both to further define it and operationalize its existence. Smith is quoted by Galagan expressing his belief that learning is a function of intent, where informal learning is “dialogical or conversational”; however, he also recognizes that formal and informal learning may exist on a continuum (Galagan, 2010). Informal learning, unlike formal learning, does not need to be planned or scheduled, nor structured in a particular way. Perhaps more so than formal learning or training, informal learning is worker-initiated (Lohman, 2005).

Informal learning has also been suggested to be linked with, or compliment and supplement, formal learning. Ellinger (2005) agrees with the assertion that informal learning accounts for a majority of a worker's development time, and also notes that it is “integrated with work and daily routines, often begins with an internal or external jolt or triggering event, is often haphazard and not highly conscious, is an inductive process of reflection and action, and is linked to the learning of others” (p. 392). Informal learning also is stimulated by formal learning and leads to the “formalization of learning.” What may seem like a paradox is actually more of a function of the level of informal learning's fidelity; that is, application of processes and learning from formal programs can be used to create enhanced informal
learning experiences (Leslie et al., 2003). The link between formal and informal learning as well as the characteristics shared and unique to each is important to discussing further definition and distinction.

For example, there are several types of workplace learning and development that may be regarded as informal, but do not by themselves define informal learning. As already mentioned, informal learning is not necessarily the same as training. The work of Peter Senge and the “Learning Organization” is relevant to this discussion. Senge’s The Fifth Discipline analyzes and defines the construct of organizational learning, which he argues is comprised of five parts: Personal mastery, mental models, building shared vision, team learning, and systems thinking. His actual definition of (organizational) learning is aspirational and goes beyond simply hosting formal training classes or creating a positive environment that enables informal learning; Marsick and Watkins summarize his definition of learning as “an ongoing lifelong process” (p. 2, 1999). The relationship between Marsick and Watkins’ work and Senge’s philosophy is important because of the emphasis on “ongoing” learning that is not marked by a single event or process; however, it does blur the lines of what is and what is not informal learning. It should also be noted that organizational (or workplace) learning encompasses a number of different methods of learning beyond strictly “informal,” including experiential, on-the-job, and even formal training.
Experiential learning, incidental learning, continuous learning, and self-development are all types of organizational learning that may share similar characteristics with informal learning. The primary distinction between informal learning and other types of learning, such as those listed above, is that informal learning “is discretionary, includes cognitive and behavioral components, and does not include participating in formal...programs” (Noe, p. 5-6, 2012). The most important distinction of informal learning from other learning or training is that it is a broad construct, especially given the definitions already presented. As mentioned, other types and definitions of learning in the workplace may exist as a part of informal learning, but do not encompass the entire construct. For example:

**Continuous Learning and Self-Development** – this is similar to informal learning in that changes within the organization serve as an impetus to learn and that personal characteristics (i.e. intrinsic motivation) may lead to learning-action (London and Smither, 1999; Marsick and Watkins, 1999); however, continuous learning and self-development is unique or different from informal learning because it contains a structure and specific goals that are results of specific learning-actions and focus. Additionally, the organizational context, such as performance, in terms of financial or productivity metrics, informs the learning that goes into self-development
whereas informal learning may be informed by organizational need as well as individual interest or specific role functions/needs. The organization is also responsible for providing the need, support, and resources for continuous learning including rewards (i.e. compensation and benefits). However, organizations are unlikely to create expectations for informal learning in order to measure participation and determine its effectiveness.

*Incidental learning* – Marsick and Watkins sought to distinguish informal and incidental learning in 2001 because as they described it, “...learning from experience is so broad that everything from Outward Bound activities to structured computer simulations is included in the definition” (p. 25). As with continuous learning and self-development, there are many similarities between incidental learning and informal learning; however, the distinguishing feature is that informal learning is intentional, while incidental learning “may be taken for granted, tacit, or unconscious” (p. 26). Incidental learning is included in Marsick and Watkins’ model of informal learning, suggesting that any variance accounted for by these unconscious events exist with a measurement of informal learning. However, given the tacit, pervasive nature of incidental learning, it can also be assumed that it comes about as a result of other learning or development experiences.
Experiential Learning – this idea, proposed by Kolb and Fry in the 1970s, may be the foundation for informal learning, but also for continuous learning, self-development, incidental learning, and some formal training programs. The experiential learning model is a cycle that has four elements: Concrete experience, observation/reflect on the experience, formation of concepts from the observation/reflection, and testing of these new concepts. The model is derived from the work of educational theorists and psychologists, namely Dewey, Piaget, and Lewin. The greatest distinction between experiential learning and informal learning is that informal learning does not need to be based on, although it is often prompted by, a haphazard experience or internal/external “jolt” (Marsick and Watkins, 1999; Marsick and Watkins, 2001) whereas experiential learning can be trigged by such an experience or designed by an organization in a more formal setting.

As a precursor to the definition for this study, and as further clarification for how informal learning is regarded in terms of implications for practice and future research, there are various overlapping and interacting definitions and types of learning that may also exist on one or more continua. Given the definitions and distinctions of different types of learning thus far, consider the visualization of informal learning’s definition in Figure 1:
Figure 1. Visualization of Training/Learning Dimensions

Again, informal learning cannot be defined by a single alternative form of learning – self-development, continuous learning, experiential learning, or incidental learning – however, informal may or may not be involved in one’s participation in those forms of learning. For example, both Experiential Learning and Incidental Learning could occur in any of the four types of learning defined (formal training, informal learning, self-development, and continuous learning). Continuous Learning and Self-Development likely will have both formal and informal aspects.
Definition of Informal Learning for this Study

In looking at informal learning, what was most important was not identifying effectiveness, methods, or the extent of its pervasiveness. Those, given past research on the topic, have been explored at length; additionally, evidence suggests that informal learning is one of the primary means of development used by employees in the workplace (Benson, 1997; Berg and Chyung, 2008). Definitions of informal learning also vary so an active, working definition of informal learning should come directly from the measurement tool used. It is not in the interest or mission of this study to “prove” what informal learning is, but rather to use an assessment of one’s participation in informal learning activities as the dependent variable. This definition of informal learning is informed by the work of Marsick and Watkins as well as other researchers mentioned above. Informal learning is defined broadly as a collection of self-initiated learning events that can be carried out by oneself, with others, or from non-interpersonal sources (Noe, 2012). This measurement tool can be seen in Appendix A.

The existing literature on informal learning lists a variety of specific examples that can be regarded as informal learning events, such as:

- Surfing the internet (Marsick and Watkins, 1999; Lohman, 2005; Berg and Chyung, 2008)
• Self-directed learning, networking, coaching, mentoring, and performance planning (Marsick and Watkins, 2001)

• Talking about and sharing resources with others as well as experimentation with techniques and tools (Lohman, 2005)

• Reflecting on past experience, talking face to face with others, email, listservs, observation, reading journals, and trial and error (Berg and Chyung, 2008)

This could be an even more extensive list, but given the pervasive, tacit nature of informal learning, not all events can be captured or described. These events and activities may be spread out over a long period of time, or include a combination or aggregation of several steps, observations, events, and generally less-explicit means of obtaining knowledge such as social modeling (Marsick and Watkins, 1999).

For the purposes of this study, based on Noe (2012) informal learning activities that define the concept include:

• Experimenting with new ways of performing work

• Reflecting on how to improve performance

• Using trial and error

• Interacting with peers, mentors, and superiors

• Reading professional/vendor publications
• Searching the internet, and
• Reading management books

Why is Informal Learning Important?

Informal learning is becoming increasingly important in the work place as technology, work systems, office designs, and job roles change (Yang et al., 2001; Mejía et al., 2007; Tannenbaum, 2010). However, informal learning is not a new concept in the work place. Prior to World War I, and still in many countries other than America, formal training programs had little focus or effort directed towards their implementation; instead, informal learning methods such as apprenticeships and other guidance for workers taught them roles and responsibilities through observation and experimentation. This changed when organizations sought a higher degree of reliability, changed to hierarchical management structures, and focused on stability. Part of this structural change was implementation of formal training to deliver consistent knowledge and skills to the workforces within organizations (Marsick and Watkins, 1999).

As can be observed from recent research in the area, interest in informal learning – including its antecedents, factors for success, and effectiveness – is increasing. Additionally, given the environment of business and innovative management practices, there are additional dimensions and
benefits to examine. For example, Volpe looked at the effects of organizational change on informal learning (1999). She notes that informal learning is not only affected by the change, but by people’s interpretations and emotional manifestations of such change. As organizations in today’s business environment are undergoing constant change and change initiatives, especially downsizing during times of economic downturn and uncertainty (as Volpe looked at), knowing how people react to the change and the effects on informal learning will help organizations set up practical solutions and be aware of this pervasive form of organizational learning.

In addition to organizational and cultural environment influences on workplace learning, the physical workplace environment, and modern changes to it, is also important. Usually considered as part of “environmental factors,” which may include elements such as manager support, learning or cultural climate, previous research in informal learning has found that certain structures and set-up of physical environment has an effect on informal learning (Lohman, 2011). Lohman suggests several implications of the physical work environment so that people may utilize informal learning effectively, including building a greater amount of free time into workers’ days and making sure workers are able to control that time, designing work areas so that people who can share knowledge are in close proximity to each
other, and providing adequate access to computers/internet; one may also assume that this includes more mobile and on-the-go technology.

Finally, while informal learning accounts for a large portion of development for employees (estimates range from 70-90%), little is invested in terms of capital or resources to facilitate informal learning experiences (Berg and Chyung, 2008). This is important for several reasons. First, how informal learning is regarded and perceived in the workplace must be considered. With an influx of data, tools, and information, employees may need to be guided through informal learning experiences. Resources and tools, while showing correlations with informal learning engagement and experiences, can also distract people from engaging in informal learning activities (Ellinger, 2005). Secondly, more research of informal learning is needed, especially in looking at personal characteristics and their effects on informal learning (Berg and Chyung, 2008; Tannenbaum, 2010). On the other hand, the fact that informal learning is inherently inexpensive compared to formal programs makes it a common and pervasive form of development in the workplace. The availability of informal learning experiences can lead to greater workplace satisfaction and an element of an employee’s total rewards (Rowden, et al., 2005).
Factors Affecting Informal Learning

Research highlighted already has shown that several factors impact and affect the effectiveness and engagement of individuals and organizations with informal learning. These factors include environmental factors such as organizational (culture) support (Lohman, 2005; Ellinger, 2005; Choi and Jacobs, 2011), supervisor support (Ellinger, 2005; Choi and Jacobs, 2011), personal learning and goal orientation (Choi and Jacobs, 2011) as well as lack of resources such as access to colleagues, subject-matter-experts, time, and money (Lohman, 2005; Ellinger, 2005). More research is needed on factors that have yet to show consistent significant relationships in research, such as workplace environment (Choi and Jacobs, 2011), although Lohman noted that a lack of proximity to colleagues’ work areas inhibited learning engagement. It should also be noted that Berg and Chyung (2008) found no significant link between “learning” culture and informal learning engagement, essentially making the argument that individuals will seek out skills and knowledge if needed regardless if the work environment facilitates the informal learning process.

Individual factors also contribute to informal learning’s effectiveness and the engagement of individuals and organizations in this form of development. Self-efficacy is an individual characteristic that has been shown to have a significant relationship to engagement in informal learning...
(Lohman, 2005; Woojaw and Jacobs, 2011). A love of learning, interest in the profession, initiative, commitment to professional development, and personality (nurturing and outgoing) were additional significant individual factors that Lohman (2005) identified as influencing informal learning. Berg and Chyung (2008) found that age had a significant positive relationship with informal learning engagement, but gender and education experience did not.

**How Does Informal Learning Work?**

As already noted, informal learning can be intentional, but lacks structure. Several definitions support this claim, but lead to further questions as to what antecedents affect learning and how informal learning is actually measured (Marsick and Watkins, 2001; Tannenbaum et al., 2010). Tannenbaum et al. (2010) suggest that a linear model is not appropriate to look at process or results, unlike a traditional/formal instructional design process. He suggests a dynamic model of informal learning that contains the following components: “Intent to learn, improve, and develop; Experience and action; Feedback; Reflection” (p. 306-7). There is no sequence to this model and all steps are equally important. However, this model does not address how learners acquire and transfer knowledge, skills, and behaviors. Generally speaking, trainee characteristics, training design, and the work environment have an effect on learning retention as well as generalization.
and maintenance of learned capabilities (Noe, 2010). While informal learning lacks the formal elements of training design, such as objectives and physical elements of the training site, people still transfer the knowledge, skills, and behaviors they gain through informal learning to their work; some researchers may even suggest to a higher degree (Birdi, Allan and Warr, 1997). Similar to learning that occurs in formal training programs, informal learning does require individual effort in terms of initiative, physical, cognitive, and emotional effort (Lohman, 2005). Also, systems, structures, and processes that help people learn informally from experiences and from others helps not only facilitate informal learning, but also provides organizations with a competitive advantage (Doornbos, et al., 2008).

Antecedents and characteristics necessary for formal training are similar to those needed for informal learning. A personal learning orientation, or one’s motivation to learn (i.e. trainee characteristic) has a significant influence on informal learning (Choi and Jacobs, 2011). Environmental factors (i.e. work/learning environment) such as organizational or cultural support for learning, willingness of others to participate in informal learning activities, and financial resources also likely impact informal learning (Sambrook and Stewart, 2000; Lohman, 2005). Even more “formal” elements, such as office design (i.e. “physical features of
the training site”) have been found to influence the extent to which individuals engage in informal learning. Lohman (2005) concludes:

“... Professionals participate in a variety of informal learning activities when the need to learn something new arises. Their selection of specific learning activities is strongly influenced by various environmental and personal characteristics. As jobs in today’s organizations continue to intensify in scope and complexity, the ability to decrease environmental inhibitors to informal learning as well as enhance personal characteristics that promote informal learning becomes critical to cultivating workplaces where working and learning are integral and natural parts of the workday” (p. 525).

This suggests that informal learning functions similarly, and depend on the same components for transfer, as formal learning, but it also further defines informal learning and emphasizes that it is more of an on-demand or just-in-time approach to learning. That is, it is integrated with the workplace or job. This also lends itself to the concept of tacit knowledge, or intra-organizational and other firm-specific business knowledge that is more difficult to explain, communicate, and/or codify largely built from one’s experience (Noe, 2010). Informal learning may focus more on this tacit knowledge, or at the very
least, knowledge, skills, and behaviors gained through informal learning are of a more tacit nature (Ellinger, 2005).

The Teaching Firm project, conducted by Education Development Center, Inc., found that informal learning helped workers acquire critical skills for their jobs, especially on the front-line. The study also stated that while the context of the organization determined the extent to which informal learning would be used, any learning not formally designed and developed by the organization was informal. An important distinction here is that while the goals and learning objectives of the learning may be “formal” and determined by the organization, the lack of a formally defined learning process is actually what distinguished formal and informal learning. The study found that informal learning occurred mostly through social and work activities that were routine and occurred within employee’s normal job performance (Leslie et al., 2003).

The Antecedents of Informal Learning Participation

Identifying the antecedents that lead to informal learning is the primary purpose of this study. As already mentioned, research has been conducted on organizational elements’ influence on informal learning, but there has been less focus on the role of personal/individual characteristics. Tannenbaum (2010) recommends several individual personality characteristics be looked at
in informal learning research. He suggests looking at self-esteem, as those with high self-esteem may be more likely and willing to seek feedback and engage in work assignments that will stretch their ability (and lead to a higher incidence of informal learning). He recommends a look at self-efficacy, because, while it has been shown that there is a significant link between self-efficacy and formal learning, it is unknown how one’s self-efficacy will impact informal learning. Ultimately, his hypothesis is one that would lead to a positive relationship with informal learning, but he is less certain than with other personality variables: “Research should examine the role of self-efficacy in informal learning. Does it operate differently? For example, some people might have high self-efficacy for learning in a structured training environment, perhaps as a result of prior strong academic performance, but lower self-efficacy about their ability to learn informally” (p. 323). He also suggests that individuals with a high locus of control will be more likely to engage in informal learning due to their feeling of control and willingness to develop themselves. These represent three of the four areas included in Judge, et al’s (1997) work on Core Self-Evaluations (CSE).

Core Self-Evaluations

Core Self-Evaluations are a higher order construct comprised of four broad traits (locus of control, self-esteem, generalized self-efficacy, and neuroticism).
representing a self-evaluation and/or judgment about oneself and self-worth (Judge, et al., 1997; Srivastava, et al., 2010; Chang, et al., 2012). Judge et al., note that CSE are not what Markus would call a self-schema nor are they external evaluations. There may be a linkage to the Big Five as well as other psychological constructs and CSE; however, CSE are exactly what they “sound” like: “Subconscious conclusions individuals reach about themselves” that are core (i.e. “fundamental in that they encompass and underlie all other, more specific evaluations”) (Judge, et al., p. 18, 1998). However, despite these being self-evaluations, their emergence as a valid construct is two fold. First, Judge et al., developed the concept from eight fields and bodies of literature/research. Secondly, CSE have shown positive relationships with several factors of individual job satisfaction and performance (Judge, et al., 1997; Judge, et al., 1998; Lau and Shaffer, 1999; Erez and Judge, 2001; Judge and Bono, 2001; Srivastava, et al., 2010).

Below the relationship between each of the components of CSE and their potential link to informal learning is discussed based primarily on the work of Judge, et al. (1997).

*Self-Esteem*

Self-esteem is the most fundamental element of Core Self-Evaluations because it is the overall value/appraisal of one’s self-worth. Self-esteem
affects job satisfaction and performance to the extent that one’s self-evaluation of this area may impact other areas in their life as well as the impact it makes on one’s choice of career and actions on the job. Self-esteem may be a predictor of participation in informal learning activities because of the characteristics of this trait: “Individuals’ self-evaluations also may affect what they seek for pleasure on the job as well as in which various job experiences and conditions affect them” (Judge, et al., 1997, p. 161). Self-esteem also moderates the relationship between self-efficacy and prior work experiences as well as training performance (Davis, et al., 2000). This gives more evidence of the interrelatedness of the individual elements of core self-evaluations and their relationship to learning. In terms of this study’s definition, it also relates to the characteristics of informal learning. As Tannenbaum (2010) points out, individuals with high self-esteem may be more likely to seek feedback and engage in stretch assignments. Additionally, those with high self-esteem may be more willing to act on “external jolts” and seek additional knowledge/skills through informal learning, as they generally regret a failure to act (Feeney, et al., 2005).

**Generalized Self-Efficacy**

Self-efficacy is essentially one’s assessment of their abilities or capabilities. It is closely related to self-esteem, but is more related to how well one works
and how confident one is in general. A large body of research related to self-efficacy’s relationship to handling work/career difficulties, task performance, and problem solving is noted by Judge, et al. (1997) and Davis, et al., (2000), which may in turn relate to participation in informal learning activities. This research has found relationships both ways; that is, self-efficacy is a result of engagement in training and, at the same time, self-efficacy plays a role in training participation and effectiveness. Matthieu, et al., (1993) confirmed several relationships including performance, achievement motivation and choice (to engage in training) and their positive relationship with training. There was also a significant relationship between initial self-efficacy and post-training self-efficacy, which may be explained by the effects of enhanced skill acquisition and performance improvement. Moreover, research has already found a significant relationship between self-efficacy and informal learning through personal learning orientation (Lohman, 2005; Woojaw and Jacobs, 2011). Self-efficacy is likely to lead to informal learning in a similar way to self-esteem. Informal learning is more likely to happen if one believes they can gain a positive result from engaging in a voluntary, self-initiated act like informal learning.
Neuroticism

Neuroticism (a.k.a. “emotional stability”) is a Big Five personality trait used in Core Self-Evaluations partly because of its relationship to self-esteem. The authors note that those who are highly neurotic display the same symptoms of those with low self-esteem; this includes “self-doubt and depression…nervous[ness] and sleepless[ness]” (Judge, et al., 1997, p. 163). These individuals low in emotional stability are insecure, anxious, lack confidence, and do not feel in control of their surroundings. These characteristics of high levels of neuroticism are important to consider in their relationship with informal learning because certain characteristics have been used in training research. For example, anxiety is negatively related to learning outcomes (Chen, Gully, Whiteman, & Kilcullen, 2000; Colquitt et al, 2000). Additionally, anxious individuals may be less likely to engage in informal learning because they can not divert attention away from performing their job to engage in the metacognitive processes necessary for informal learning (Kanfer and Ackerman, 1989; Gully and Chen, 2010).

Locus of Control

While not having a converse relationship (as self-esteem and neuroticism have), locus of control is somewhat related to self-efficacy. The distinction is that “locus of control is focused more on control over outcomes to which the
performance leads” whereas “self-efficacy pertains to one’s belief in one’s capacity to perform...and self-control of thoughts and emotions as to bring about specific attainments” (Judge, et al., 1997, p. 167). In short, self-efficacy is task-specific while locus of control is a dispositional trait; however, the authors note that these may be similar measures, although locus of control may be less exact and indirectly related to dependent variables. Locus of control describes the degree to which people believe that they influence events in their lives. Individuals with an internal locus of control (internals) believe that they can control and manage situations through their own actions. Individuals with an external locus of control (externals) attribute what happens to them to factors beyond their control, whether it be externalities, chance, or other elements (Rotter, 1966). Internals are likely to believe that seeking out and engaging in learning can help them succeed at work. Research has shown that Internals are more motivated to learn and participate in formal training and development programs (Spector, 1982; Colquitt et al, 2000; Ng et al., 2006). Therefore, the expectation is that internals will engage in informal learning to a greater extent than externals because they believe that they can improve their skills through interacting with peers, seeking feedback, and reflection.
Given these individual elements and the higher-order construct of CSE, there is likely a link between it and informal learning. Using CSE as opposed to individual measures of personality or self-assessments is beneficial to this study for a variety of reasons. First, these personality factors are salient to and frequently used in learning and development research as well as for practical HR implications and interventions. Additionally, research conducted by Erez, Judge, et al. (2001 and 2002) found that using the CSE construct predicted outcomes better than individual personality variables. Because of Tannenbaum’s (2010) suggestion to look at self-esteem, self-efficacy, and locus of control, it made conceptual sense to use CSE and its developed scale (CSES) to examine these individual personality characteristics and traits. Judge and Kammeyer-Mueller suggest that “Employees must act independently, as shapers of their own work environments and careers...[although] there has not been much attention to the implications of core self-evaluations for the management of organizations” (p. 331). They go on to show through their review of the literature (including much of Judge’s own work) and conceptual models that CSE may help one affect their environment in order to engage more positively in an organization.

In a more theoretical sense, Judge, et al., summarize work in clinical psychology (by Beck, et al.) that shows those with dysfunctional thinking (i.e.
related to the individual CSE factors) have “repetitive, automatized thoughts (Beck, 1987) which are illogical in nature...[and] are manifested in such cognitive tendencies as overgeneralization ... irrational perfectionism ... overdependence on others ... and desire for social approval” (1997, p. 173).

Given previous research that looks at who participates in informal learning and for what reasons, it is likely that a relationship exists between the higher order construct of CSE and informal learning. Judge, et al., also state: “Dispositional characteristics may help account for discrepancies between needs and values. People with low self-esteem and/or low general self-efficacy, for example, may doubt their ability to grow successfully, such as through learning new skills and taking on new responsibilities. This could affect...their responses to opportunities on any given job” (1997, p. 179). Therefore, the first hypothesis for analysis is:

H1: A positive, direct relationship exists between CSE and Informal Learning.

Research has shown that workplace support as well as individual characteristics have a positive relationship on self-development participation (Orvis and Leffler, 2011). It should be noted, however, that in the Orvis and Leffler study, the interaction between certain individual characteristics
(namely, self-efficacy), workplace support, and one’s propensity to engage in self-development is complex. This may be due to the fact that individuals are not simply bound by their personality and core-evaluations, but also by external factors that affect both their personality and work. That is to say, variance associated with informal learning in the workplace cannot be explained completely by individual, internal personality factors. Tannenbaum (2010) also suggests that organizational or situational factors be analyzed in informal learning research. Because of the volitional and discretionary nature of informal learning, time is a required resource for one to engage in learning informally (Tannenbaum, 2010; Marsick and Volpe, 1999; Sambrook and Stewart, 2000; Lohman, 2005). Therefore, there is a need to examine another variable that is important in an age of increasing demands from employees for work-life balance and wellness: Work-Family Conflict (Carlson, 1999; Holbeche, 2005; Beauregard and Henry, 2009; Basuil and Casper, 2012).

**Work-Family Conflict**

Inter-role conflict between family and work roles has been studied extensively for over thirty years. Greenhaus and Beutell (1985) offer the definition of Work-Family Conflict (WFC) as based on the work of Kahn: “A form of inter-role conflict in which the role pressures from the work and
family domains are mutually incompatible in some respect. That is, participation in the work (family) role is made more difficult by virtue of participation in the family (work) role” (p. 77). Work-Family Conflict is further defined in three forms: time-based, strain-based, and behavior-based conflict. For this study, we focus on time-based conflict due to time being the most relevant (and salient) resource needed for informal learning. Additionally, so that the complete picture of this variable can be captured, we look at both directions of WFC: Work Interference with Family (WIF) and Family Interference with Work (FIW).

This is an area of importance for HR management and development practitioners for various reasons. First of all, according to Kahn, role and inter-role conflict make the pressures of one role incompatible with the other (Greenhaus and Beutell, 1985). In the case of WFC, that is to say that work pressures are incompatible with family pressures. As a practical example with time-based conflict, the necessary hours it requires, both because of schedule and preoccupation, to complete work tasks or take care of a family interfere with each other. In other words, a job or specific work-related role may take expected hours/time from an employee who may also be expected to care for a young child or spend with a spouse. In vernacular terms, a day only has 24 hours in it: If you sleep for six, that leaves 18 hours to be accounted for with work, family, and other roles. Working 10 hours leaves only eight
hours for family and the other roles, which may not meet the expectations or demands from family. For HR professionals, WFC as it relates to “work-life balance” has important implications. Shepard and Betof (2011) surveyed 100 high-ranking women in organizations who had left their positions voluntarily. These women offered several related reasons for leaving their organizations including work environments that didn’t allow the flexibility to work off-site or adapt hours (time) to family obligations. Additionally: “Women are clear that there is no such thing as ‘balance’ between their personal lives and their careers. Women report that the juggling they need to do to manage their home and work lives leaves them feeling exhausted and unfulfilled in both parts of their life. To some women it seemed the message was that it was unacceptable to have a life apart from work and that time needed for family reasons was not seen as valid or important” (p. 413).

Holbeche (2005) posits that it is in “an organization’s best interests to focus on building a partnership with employees on issues such as careers and work-life balance if the organizations themselves are to survive and thrive in the future” (p. 7). She also emphasizes that work-life balance, especially in terms of working longer hours, leads to dissatisfaction with other parts of one’s life, and may even be perceived as a form of harassment. Not only does effective work-life balance lead to more satisfied employees, but it may lead to a more productive workforce (Gitman and McDaniel, 2008). This imbalance is also a
function of changing demographics and economic conditions for organizations; longer-hours, more demands, and decreased costs are all likely to impact WFC (Boyar and Mosley, 2007).

The inference that WFC impacts informal learning is a result of linking together several bodies of research. For example, based on the informal learning research already discussed, we know that it is generally an activity initiated by an individual giving a conscious, discretionary effort that requires time beyond and above completing job/work tasks. This, of course, is opposed to formal learning or training, which is dictated by the organization and often requires employees to attend a learning event at a specific time. We can look to Conservation of Resources (COR) theory (Hobfoll, 1989) to explain the relationship between WFC and informal learning. Conservation of Resources theory explains stress due to an individual’s desire to keep resources such as objects, conditions, personal characteristics, and energies (Grandey and Cropanzano, 1999; Hobfoll, 2011). Relevant principles of COR are that “resource loss is disproportionately more salient than resource gain” and “people must invest resources in order to protect against resource loss, recover from losses, and gain resources” (Hobfoll, p. 117, 2011). That is to say that COR is related to the balance between one’s resources and the demands that require those resources. Hobfoll (2011) also recognizes the role of work-family interactions in this theory: “Work and family are both jealous
demanders of individuals’ resources, and to the extent that resources are built in one domain that facilitates the other domain, this ‘battle for resources’ can become a common agenda” (p. 118). Grandey and Cropanzano (1999) summarize the relationship between COR and WFC: “According to the COR model, as more conflict is experienced in one domain, fewer resources are available to fulfill one’s role in another domain” (p. 353). And specifically related to time-based WFC, Tompson and Werner (1997) posit: “...If an individual has limited time at work or anticipated experiencing interruptions from another role, it is likely the employee will attempt to complete mandatory tasks as opposed to those which are not required” (p. 586).

The research on time-based WFC and COR, as well as popular press discussion of work-life balance, led to the development of several hypotheses for this study. The first hypothesis examines the direct effect of the WIF and FIW dimensions of time-based WFC on informal learning. Because increased WFC suggests less time resources individuals can devote to informal learning in one’s job role (or at work), it is expected that:

H2a: There is a negative relationship between time-based WIF and informal learning.

H2b: There is a negative relationship between time-based FIW and informal learning.
Individual characteristics, such as personality, are also related to WFC. Both a combination of dispositional factors along with the specific variable of “negative affectivity” were found to be significant predictors of increased time-based WFC (Carlson, 1999). Neuroticism has also been shown to be a positive predictor of increased time-based WFC (Grzywacz and Marks, 2000; Rantanen, et al., 2005). Boyar and Mosley (2007) also found that CSE predicted WIF and FIW. Given that neuroticism is a component of CSE and that negative affectivity may be a reflection of one’s self-worth, consideration of this relationship is important to this study.

Rantanen et al. (2005), also found that the interaction between neuroticism and WFC was a positive predictor of psychological distress. While psychological distress, specifically, is not of interest in this study, the moderating effect of the interaction term suggests that it may apply to different dependent variables. This is further supported with COR theory as those with existing high evaluations of self can cope better with resource loss or, essentially, are starting with more resources in terms of self-esteem and self-worth (Grandey and Cropanzano, 1999). Hobfoll (1989) along with Grandey and Cropanzano (1999) suggest that “COR allows for predictions about the moderating relationship of self-esteem among these work-family
variables” (p. 353, 1999). Boyar and Mosley (2007) found a partial mediating relationship of WFC between CSE and job and family satisfaction. While the latter variables are not of interest in this study, WFC’s partial-mediating effect of CSE on job-related factors also suggests that a relationship may exist where WFC influences or explains the relationship between CSE and informal learning. Matthieu, et al. (1993) found that participants in formal training programs that experienced individual constraints, such as “competing demands for their time” (p. 141) reacted less positively to training and also felt that they could not master skills from the training. Those authors attribute not only a negative effect on training reaction due to individual constraints but also on self-efficacy, one of the components of CSE. Individuals with high CSE that experience higher levels of WFC may be more easily able to overcome time-based inter-role conflict because they have additional resources (i.e. personality factors) that can help them either overcome the demand for resources or that can be “spent.” If there is a significant relationship between CSE and informal learning (H1), the level of WFC is likely to change that relationship. Therefore it is hypothesized that:

H3: WFC will moderate the relationship between CSE and informal learning.

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2 It should be noted that Graney and Cropanzano, despite providing theoretical and past empirical support for the moderating effect, did not find the same effect in their study.
The complete conceptual model for analysis is as follows:

Figure 2. Conceptual Model for Analysis
Method

Participants and Procedure

Data was collected from managers of a casual family-dining restaurant chain. The data was collected by Noe and Tews for a similar study, and therefore included survey responses to several items unrelated to this study. This survey was administered in two phases. Core Self-Evaluations were measured at Time 1; Work-Family Conflict and Informal Learning were measured at Time 2. Of the total sample the survey was sent to, 265 completed the first response of the survey, one completed the second response only, and 225 completed both the first and second response. Given that the data needed for this study spanned across Time 1 and Time 2, the final sample size for this study is 225. T-tests were run on all variables collected at Time 1 to compare the group that responded both times (n=225) to the group (n=40) that responded only the first time. There were no significant differences in Time 1 responses between the groups.
Measures

All measurements used for this study used a five-point scale; Core Self-Evaluations and Work-Family Conflict used a likert-scale with points based on Agree/Disagree, while Informal Learning’s scale used frequency. As mentioned previously, the survey was split into Time 1 and Time 2 with the same sample, but each variable was only measured once. The surveys on which the variables of interest were included are mentioned below. It should be noted that all measures on these surveys are self-reported.

Core Self-Evaluations were measured using a 12-item Core Self-Evaluations Scale (CSES) developed by Judge, Erez, Bono and Thoresen (2003). This scale uses a five-point likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) and contained items such as “I am confident I get the success I deserve in life” and “Sometimes I feel depressed” (reverse-scored). See Appendix B for the complete list of questions and instructions. The reliability coefficient (Cronbach’s alpha, α) for this scale was .87.

Work Family Conflict was measured using Carlson’s, et al. (2000) scale. The scale included items for all types of WFC (time-based, strain-based, and behavior-based), but only time-based items were used in the survey. As Carlson’s validation of the scale involved confirmatory factor analyses of the six dimensions (i.e. time-based WIF, strain-based FIW, etc.),
the three overall forms (i.e. time, strain, behavior), two directions (WIF, FIW), and overall model, taking out just time-based WIF and FIW should still be a reliable and valid measure. An example of a time-based WIF question is, “My work keeps me from my family activities more than I would like.”; and for time-based FIW, “The time I spend on family responsibilities often interfere with my work responsibilities.” See Appendix C for a complete list of questions on this scale. The reliability coefficients for time-based WIF and time-based FIW were .89 and .93, respectively (and .74 for all six items, combined).

Finally, informal learning was measured using a scale developed by Noe (2012). This measurement contains three groups, “Learning through Self,” “Learning from Others,” and “Learning from Non-Interpersonal Sources” each with three corresponding questions. Subjects responded to the questions of this scale based on the frequency in which they engaged in informal learning (1=Never, 2=Rarely, 3=Sometimes, 4=Frequently, 5=All the time). Examples from each area are: “Experimenting with new ways of performing your work,” “Interacting with your peers,” and “Searching the internet for job relevant information.” See Appendix A for a complete list of questions on this scale. The reliability coefficient for all scale items was .90, and individual groups were: .81 (self), .83 (others), and .83 (non-interpersonal).
Data Analysis Strategy

Descriptive statistics were run using SAS 9.3 and Microsoft Excel. The first two hypotheses were tested using correlation analysis, while ordinary least squares (OLS) multiple linear regression (Cohen, et al., 2003) was the primary method for testing the interactions (H3). Because interaction terms would be analyzed, variables were centered, as advocated by Cohen, et al. (2003), by subtracting the mid-point of each scale (3) from each aggregate measures’ result. Hierarchical regression, as explained by these same authors, was used to determine effect size of variables above and beyond others as well as to determine which variables added significant amounts of variance-explained by the model. This analysis was done in five steps: In the first step, only core self-evaluations were included; the second and third steps added work interfering with family (WIF) and family interfering with work (FIW) variables. Finally, the last two steps added cross product interaction terms of core self-evaluations with work interfering with family (CSE x WIF) and core self-evaluations with family interfering with work (CSE x FIW). Interaction terms were examined at high and low levels to determine where significant interactions occurred as well as their direction.
Results

Descriptive statistics of variables in this study are in Table 1 below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal Learning</td>
<td>3.6</td>
<td>0.7</td>
<td>1.0</td>
<td>5.0</td>
<td>-0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>CSE</td>
<td>4.3</td>
<td>0.1</td>
<td>2.6</td>
<td>5.0</td>
<td>-0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>WIF</td>
<td>3.6</td>
<td>1.0</td>
<td>1.0</td>
<td>5.0</td>
<td>-0.5</td>
<td>-0.2</td>
</tr>
<tr>
<td>FIW</td>
<td>1.9</td>
<td>1.0</td>
<td>1.0</td>
<td>5.0</td>
<td>1.3</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Table 1. Descriptive Statistics (n=225)

Core Self-Evaluations were generally high, given the mean (4.3), and had a small standard deviation. The lowest mean of the 12-item CSE measurement was 2.6, unlike the measure of informal learning and the two dimensions of WFC, which spanned the top and bottom of those scales’ ranges (one to five). In fact 175 of the 225 subjects reported an average CSE score of 4 or greater. Histograms showing the distribution of each variable can be seen in Appendix D. As will be discussed in this section, the skewness and kurtosis of the FIW dimension of WFC is somewhat concerning, especially relative to the other variables. This may be concerning if it inflates the
omnibus F tests in regression analysis. A complete breakdown of each scale-item, as the above reflects aggregate, averaged measures, is in Appendix E. In looking at the raw data, no notable outliers were identified based on the aggregate scores of each measure alone. Further examination of outliers and influential observations took place via regression diagnostics; while influential observations were found, none were removed. Appendix F contains a detailed discussion of those observations.

Pearson product moment coefficients (correlations) of main effect variables were also examined (Table 2) to test for Hypotheses 1 and 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Informal Learning</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CSE</td>
<td>0.36*</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>3. WIF</td>
<td>-0.29*</td>
<td>-0.30*</td>
<td></td>
</tr>
<tr>
<td>4. FIW</td>
<td>0.00</td>
<td>-0.21*</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Table 2. Pearson Correlation Coefficients (n=225)  
* p < .01

Hypothesis 1 stated that Core-Self Evaluations would have a positive relationship with informal learning. The correlation between those two variables was the only positive, significant relationship ($r = 0.36, p < .01$) confirming H1. Hypothesis 2a and 2b stated that the WIF and FIW dimensions of time-based Work-Family Conflict would have a negative relationship with informal learning. Only WIF correlated significantly with
informal learning ($r = -0.29$) confirming H2a, but rejecting H2b. While not used to test for any hypotheses in this study, it should be noted that both WIF and FIW has a significant, negative relationship with CSE ($r = -0.30$ and $r = -0.21$, respectively, $p < .01$).

To test for H3 a hierarchical regression was run on centered variables and the cross-product interaction terms of WIF x CSE and FIW x CSE were added. The model with informal learning as the dependent variable and CSE, WIF, FIW, WIF x CSE, and FIW x CSE as the independent variables had a significant omnibus F as well as significant findings for all parameters except WIF, FIW and the FIW x CSE interaction. Table 3 shows the Betas, t-values and p-values as well as changes to the total variance accounted for ($R^2$) and the significance of those changes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$\beta$</th>
<th>t-value</th>
<th>p</th>
<th>total $R^2$</th>
<th>$R^2$ $\Delta$ p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>0.63**</td>
<td>4.01</td>
<td>&lt;0.01</td>
<td>0.13**</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>WIF</td>
<td>0.16</td>
<td>1.12</td>
<td>0.26</td>
<td>0.17**</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>FIW</td>
<td>0.14</td>
<td>1.26</td>
<td>0.21</td>
<td>0.17</td>
<td>0.25</td>
</tr>
<tr>
<td>WIFxCSE</td>
<td>-0.22*</td>
<td>-2.17</td>
<td>0.03</td>
<td>0.19*</td>
<td>0.02</td>
</tr>
<tr>
<td>FIWxCSE</td>
<td>-0.05</td>
<td>-0.60</td>
<td>0.55</td>
<td>0.19</td>
<td>0.55</td>
</tr>
</tbody>
</table>

$F(5,219)=10.54, p < 0.01$, adjusted $R^2=0.18$

** $p < .01$, * $p < .05$

Table 3. Regression analysis results on centered data ($n=225$)
With CSE in the model, only the addition of WIF and WIF x CSE resulted in a significant increase to the total variance accounted for, confirming H3.

Prior to probing the interaction, however, to confirm that FIW was not a significant predictor either as a direct effect on informal learning or in the interaction with CSE, an attempt to reduce FIW’s skewness was made and additional analyses were conducted. To eliminate the skewness of FIW, it was logged with the raw, non-centered data, which resulted in reducing all descriptive statistics for the variable (mean=0.51, sd=0.46, min=0, max=1.61, kurtosis=-0.83, skewness=0.35). The reduction in skewness did not change any significant findings from the regression analysis of the raw data (see: Table 4) using the three main effects. Therefore, the FIW variable was kept in its original (and centered) state for additional analyses.

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Parameter Estimate</th>
<th>t Value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>0.50*</td>
<td>4.76</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>WIF</td>
<td>-0.14*</td>
<td>-3.02</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>FIW</td>
<td>0.08</td>
<td>0.76</td>
<td>0.45</td>
</tr>
</tbody>
</table>

\[ F(3,221)=14.89, \ p < 0.01, \ R^2=0.16 \]

* \( p < .01 \)

Table 4. Regression results on non-centered data with FIW logged (n=225)

Hypothesis 3 considered the moderating effect of WFC on CSE’s relationship with informal learning. As already discussed, the interaction of WFC and CSE was significant (see Table 3) confirming Hypothesis 4, but
only with the interaction of WIF and CSE. Using a dataset of centered variables, this interaction was probed at high and low levels of WIF. The results can be seen in Table 5 below:

<table>
<thead>
<tr>
<th>Level of WIF</th>
<th>CSE’s Parameter Estimate</th>
<th>t Value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (-1 SD)</td>
<td>1.57**</td>
<td>2.90</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>High (+1 SD)</td>
<td>1.05**</td>
<td>3.46</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

\[ F(4,220)=13.12, \ p < 0.01, \ R^2=0.18 \]

** p < .01

Table 5. Probing the WIF x CSE interaction at high and low levels of WIF

While the positive effect of CSE on informal learning decreases is reduced at a higher level of WIF, the interaction is still significant at ±1 SD from WIF’s mean. As can be seen in Figure 4, plotting the interaction at low and high levels of WIF show positive relationships between CSE and informal learning. However, at higher levels of WIF, the relationship is diminished. The implication is that when individuals have lower CSE, regardless of the level of WIF they experience, they report lower levels of informal learning; whereas, when one’s CSE is high, there is a bigger difference in the level of informal learning at low and high levels of WIF.
Figure 3. Interaction of CSE and WIF on Informal Learning
Discussion

In the analysis, a majority of hypotheses were confirmed, showing that both antecedents, CSE and WFC, specifically time-based work interference with family (WIF), predict informal learning. There are several specific findings to point out about the results.

First of all, the relationship between CSE and informal learning accounted for the most variance and appeared to have the largest effect on informal learning. Even in the full model, WFC and its interactions, while significantly increasing the total variance accounted for, represented a fairly small amount of the total variance in the model. CSE’s relationship with informal learning was especially strong in a positive direction showing that as CSE ratings increase so does informal learning. This supports previous research on CSE’s impact on one’s actions at work. It may also be implied that CSE and informal learning are positively related because of two reasons: one’s belief that they can learn (in an informal fashion, i.e. on their own) and that their actions at work are in their control (i.e. locus of control).

A look at hypotheses 2a and 2b aided in the interpretation of the relationships in the full model. H2a was supported; WIF was a significant
negative predictor of informal learning. This means that informal learning decreases as an individual perceives more time-based role-conflict in which work interferes with family. This supports Conservation of Resources (COR) theory in that one whose resources (e.g. time, focus) are limited cannot engage in a volitional act such as informal learning as often. H2b, FIW’s relationship with informal learning, was rejected; COR theory may actually help explain this null relationship. One’s time-based inter-role conflict with family may have little bearing on the resources needed to engage in informal learning at work. In other words, WIF requires one to focus their work-time resources on family, while the opposite may be true, or simply separated, with FIW. However, it should be noted that FIW’s overall measurement had a (raw) mean of 1.9 (median=2), the lowest of all variables, suggesting that this sample experienced less FIW than WIF. The cause of this is unknown given the data collected; however, future research may focus on those with higher FIW to see if it has an effect on informal learning.

The significant interaction of WIF and CSE on informal learning also contributes to the understanding of COR and its connection to the variables in this study: both time as well as the elements of CSE can be considered resources. The relationship between CSE and informal learning is moderated by WIF; in probing the interaction, it was found that CSE is still a positive predictor of informal learning, but for people who experience high levels of
WIF the effect of CSE on informal learning is reduced. This implies that if one is experiencing more role-conflict, the determination of CSE to prompt informal learning at work is lower than those that have a lower degree of the time-based role-conflict measured in this study. Increased time resources needed for family impacts one’s CSE and as a result impacts informal learning. It should be noted that despite a diminished relationship between CSE and informal learning when levels of WIF are high, the relationship is still significant and positive. This implies that despite WIF having a moderating effect, a high CSE may be enough to overcome family or role conflict from completely stopping one’s informal learning. Additionally, looking at the interaction, WIF seemed to have little moderating effect on the relationship between CSE and informal learning at low CSE levels. That is to say, individuals who have low Core Self-Evaluations likely aren’t engaging in as much informal learning as individuals who have high Core Self-Evaluations regardless of the level of time-based Work-Family conflict in their lives. This may imply that “personality resources” are more important to have than “time resources” in one’s determination of how much informal learning they can engage in at work.

The effect sizes of each variable and group of variables are interesting in this study as well. Fairly clear distinctions can be made given significant direct effects, but despite CSE’s seemingly large effect on informal learning,
significant WFC and interactions had a much smaller effect. While the
significant effects should still be regarded as predictors of informal learning,
this effect size should shape where organizations and practitioners focus
efforts to manage one’s development and learning, especially through
informal methods.

Implications for Theory

The work of previous researchers is both confirmed and expanded in
this study. Additionally, these antecedents of informal learning, which were
largely confirmed in analysis, should help shape future research and practice.
Core Self-Evaluations, which include self-efficacy, self-esteem, neuroticism
and locus of control, relate to several research topics Tannenbaum (2010)
proposes. His propositions related to CSE are that “Individuals with a strong
self-efficacy about informal learning will demonstrate greater resilience, and
will be more likely to persevere during and learn from challenging
situations,” “Individuals with an internal locus of control will be more likely
to consciously seek out and engage in informal learning experiences, seek
feedback, and reflect on their experiences,” and “Individuals with higher self-
esteeom will be more likely to accept a challenging assignment and more
comfortable seeking out feedback about their performance, but less likely to
perceive a personal learning need” (p. 314). While this study did not examine
one’s feelings about informal learning specifically, it provides a foundation for additional ad hoc testing and scale development with this notable and widely used self-assessment of one’s worth and personality. Additionally, it confirms a credible and significant link between these self-evaluation areas to informal learning. Given the work of Judge, et al., on CSE and its relationship to other areas of work such as satisfaction and performance, it is a logical conclusion that a similar relationship with informal learning in the workplace exists.

Work-family conflict and balance is a current issue in practice, and is a fairly new concept in research related to learning and development. This study begins to explain the relationships between this type of role and time conflict and also links to the concept of Conservation of Resources theory in explaining the relationship between time and role conflict with informal learning. Although relationships between WFC and informal learning were weaker and smaller effects than CSE, the significant existence of time-based work-family conflict, especially in the work-interfering with family (WIF) dimension, which was significant throughout multiple levels of the analysis, is important to note as an additional antecedent to informal learning.

Finally, the interaction of personality factors (CSE) and role-conflict (WFC), provides a clearer picture of how time-based inter-role conflict moderates CSE’s relationship with informal learning. It expands upon work
of Grzywacz and Marks (2000); Rantanen, et al. (2005); Boyar and Mosley (2007), and confirms relationships between WFC and personality factors.

**Implications for Practice**

Given this study, there are several implications for HR professionals (especially those involved in organization development, organization/job design, recruitment/talent acquisition, learning and development) and general managers/supervisors within organizations. This study shows that a significant positive relationship exists between people’s positive self-image and informal learning activities at work. Practices throughout an organization can bolster and support high self-worth for employees. Additionally, the relationship and interaction with work-family conflict suggests that work-life balance be considered in workplace practices to eliminate role-conflict as it may impact employees’ concept of self-worth and, perhaps more importantly, their engagement and participation with informal learning. To suggest implications and make recommendations, this section will be divided up into several major areas of human resource management.

*Recruitment and Selection*

While research and validity is mixed on using personality tests as a selection measure (Tett and Christiansen, 2007), an organization that wishes its
employees to engage in more informal learning would be well-served to recruit and select employees that have high concept of self-worth. While it is not recommended to use the 12-item Core Self-Evaluation Scale as a means to select employees, Bipp (2010) offers several implications from her research on linking personality factors (including CSE) to what people want from jobs. Her findings “…entail important practical implications for the enhancement of Person-Job Fit in terms of personality…Taking interactions between personality traits and factors in the work environment into account opens the possibility to enhance work motivation and performance by matching the right person to the right job. The fact that people are differentially attracted to different job characteristics can therefore…be used to select the appropriate people for a given job situation…” (p. 36). Tett and Christiansen (2007) also support a similar concept in advocating effective job analysis as a means of linking personality tests as valid selection criteria. This, of course, brings up the issue of knowing both essential duties as well as the “critical competencies and capabilities that define superior performance in the role” (Lash and McMullen, 2011, p. 465).

Effective job analysis is a means towards achieving this knowledge and implementing an assessment of personality in order to make job placement and selection decisions. Organizations implementing a personality test, however, should be weary of potential discrimination, specifically desperate
impact, on applicants and applicant pools when using any kind of assessment, especially a personality assessment (with low validity) not linked specifically to critical job characteristics. If assessments outside of typical interviews are not used by an organization, well-crafted behavioral interview questions can be written that, at the very least, collect information about how potential employees view their worth (self-esteem and self-efficacy), believe that they are in control of events (locus of control), and handle conflict (neuroticism and work-family conflict). Again, the primary issue in administering any kind of selection assessment (even an interview) or making any selection decision must be grounded in the critical, essential tasks of the job. Organizations that believe informal learning is necessary for success in the job should certainly analyze the extent to which one needs to engage in informal learning on the job to be successful or complete essential duties. Then, linking selection measures will be effective and legal.

Organizational Development, Change Management, and Org/Job Design

While all of these are broad areas of human resource management-practice, they share linkages with personality-factors (Bipp, 2010) and the broad

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concept of work-life balance (Holbeche, 2005). Jobs should be designed and aligned in an organization in such a manner to promote high CSE and limit or control potential role-conflict. However, the causes of WFC, while primarily attributed to external sources related to work (and not family), could be variable in the sense that they are short-term or may not affect one’s family or work life in the future (Poposki, 2011). Additionally, in some fields of work or industries, providing what one may believe to be a logical solution to WFC, such as flexible schedules, have actually been linked to an increase in WFC (Blair-Loy, 2009). Given the research on WFC to counter-act its negative effect on informal learning (and interaction with CSE relationship to informal learning), it should be left up to organizations to determine individualized plans, policies, and organizational designs that meet their own employees’ needs. Because of the personal nature of WFC, as well as personal perception of its cause, employers should rely on best practices, consultation with individuals, and research related to the concept of WFC if they truly wish to control for this factor. Regular implementation and analysis of engagement, commitment, or other “voice of the employee” surveys would be one way to identify ways to control for WFC as well as boost CSE.

Additionally, the finding in this study that the time-based WFC dimension of work interference with family is of significance (and greater effect) than family interfering with work is also important to the topic of
organization and job-design development. Again, this may be an issue of perception, but it is valuable for employers to keep in mind that an individual, on average, views work as interfering with family to a greater extent than family interfering with work, and that affects work-place practices (i.e. informal learning). Flextime policies, depending on the setting, may work; but given Blair-Loy’s (2009) research, perhaps the better treatment is reducing employee workload or setting aside time for them to engage in informal learning activities while at work. Lohman’s (2005) research supports this practice as she found that a lack of time was a significant inhibitor of informal learning in the work place.

**Training and Development**

While this study didn’t look at specific informal training methods or tools when analyzing the relationship between CSE, WFC, and informal learning, there are certainly implications for both formal and informal learning and development. For example, offering necessary (formal) development for employees during scheduled work time may actually decrease WFC, promote CSE, and thusly lead to more informal learning. One basic intervention that organizations can implement would be to collect more data from participants regarding their reactions to formal training (i.e. Kirkpatrick’s first level of evaluation). This additional information may inform organizations as to
constraints or external issues that impacted engagement in training or a belief that skills could be learned (Matthieu, et al., 1993). Formal training programs that consider these antecedents of informal learning will help facilitate voluntary, discretionary development effort through informal learning and will lead organizations to become more in line with the concept of Senge’s “Learning Organization.”

In general, assisting employees in avoiding WFC, especially WIF, will boost informal learning; it may also impact one’s CSE (which leads to additional positive effects beyond just additional engagement in informal learning). If organizations view informal learning as a core competency or element of their strategy, there are a variety of ways these antecedents can be affected through aligned, effective human resources management practices. Some of these are highlighted above, but a complete analysis of compensation and reward strategy, performance management practices, and the use of HR technology should be completed. Regardless, considering these antecedent variables, especially CSE, is critical in helping to support and facilitate employees’ informal learning.
Study Limitations and Future Research Directions

There were several limitations in this study, although none appear to affect validity of the findings. First, there are some limitations and potential sources of error given the survey design. Because core self-evaluations were collected on the first survey and not the second, and time-based work family conflict was measured on the second, there is the potential for a lack of consistency in results as well as changes in one dimension or the other over time. Given the significant interaction and WIF’s moderating effect, the level of variance accounted for by these two variables may have been significantly different if CSE and WFC were measured at the same time. On the other hand, separating the measurements across two separate surveys completed at different times may limit common method variance, specifically consistency motifs where respondents maintain consistency in responses instead of truly reflecting attitude or behavior (Podsakoff, et al., 2003).

The survey did not collect demographic information such as gender or age, the former of which had been a significant predictor of informal learning in previous research (Berg and Chyung, 2008). The lack of this data also limits what factors could be controlled for in the overall model and regression
analysis. Luckily, this was a large sample size, which helped control for any potential confounding effects. Finally, the survey relied on self-reports for the measurements of each variable used in this study. Method variance and bias is the concern with self-report measures, despite their extensive use in organizational behavior research (Spector, 1994); however, each measurement used in this study had previous validation from their respective researchers and developers (Judge, et al., Carlson, and Noe) using methods such as confirmatory factor analysis. To provide further support for their validity and reliability, Cronbach’s alphas for these self-report measurements were all of acceptable levels in those initial validations and in this study.

Aside from the survey, the individuals in the sample represented only one job-family (managers) in a casual family restaurant chain. Expanding the study to workers in several job families within the organization or looking at individuals in the same job between similar organizations would not only be interesting, but also help confirm the results found in this study. Additionally, it would increase the validity of generalizing results and implications to other jobs, employers, and industries. Wicker and August (1995) advocate applying “constant methods” to different groups in order to effectively assess the generalizability of results. These researchers conducting a study that looked at the extent to which workload affected
favorable views of associates, job satisfaction, and stress. There were significant differences in these views for individuals with higher workloads – one can assume that the workload of the managers in this study is at a high level potentially affecting workplace factors such as informal learning. However, they also note higher levels of stress are often reported by lower level, “Operative,” workers. By only examining one job within one organization, there is also potential variance not accounted for that could impact effect sizes of the antecedent variables analyzed; in other words, non-managerial workers (e.g. wait staff at the restaurant) may actually have higher levels of WFC (i.e. stress) and explain the relationships in this study differently. Also, while the informal learning scale assesses several different ways informal learning can occur for managers, it is unknown the extent to which informal learning is advocated or used at other levels (or in other jobs) in this organization. However, despite a desire for more information about the job and organization, the variables analyzed in this study still showed significant effects with informal learning. The data collected and analyzed show significant direct effects and interactions between Core Self-Evaluations, Work-Family Conflict, and informal learning. Additionally, as independent variables, which are in any way correlated, are added to the model, the total variance accounted for will also increase (Cohen, et al., 2003). Inflating the overall r-squared may help explain more variance and
more factors related to informal learning, but may also diminish the impact of the study (and effects) for theory and practice.

Given the variance that CSE accounts for in informal learning, this study suggests that it should be considered as a foundational antecedent for informal learning. Therefore, additional research should look at other personality factors, and in a variety of ways (i.e. observation/non-self report, longitudinal, etc.) to determine other significant personality factors and traits that relate to one’s engagement and participate in informal learning. Since informal learning is a voluntary act of the “self,” this finding of CSE’s positive relationship is not surprising; however, personality is also a considerably large area with multiple dimensions that impact individuals and groups. Despite significant findings in this study, research on CSE and other personality factors should not stop. Instead, these findings should serve as a meaningful foundation for research and practice of a learning and development professional or of any organization interested in informal learning. Tannenbaum, et al. (2010), suggest several individual factors to examine in future research, and many remain interesting at the conclusion of this study. These include learning motivation (motivation to reflect and improve as well as seek out informal learning), Big Five characteristics (conscientiousness, openness), self-awareness (metacognition), and feedback orientation (seeking and valuing feedback from experiences at work).
Role-conflict, as measured in this study as two dimensions of time-based work-family conflict, also showed some significant relationships with informal learning. Despite its significance, given the relatively small amount of variance accounted for in the relationship between work interfering with family and informal learning, additional research should be conducted on this WFC variable’s effect on informal learning. Work-family issues are of importance in practice for organizations to build their employee value propositions and employment brands, but also need to be examined more carefully in terms of how people learn and develop at work. The latter is certainly an area that researchers should consider to look for stronger links between work roles and “external” roles. This is further prompted and encouraged because of the non-significance of family interfering with work (FIW) dimension of WFC. While not significant with the data collected in this study, other organizations and jobs may have a different representation of FIW. The additional dimensions of WFC should also be considered in future research. Specifically, strain-based and behavior-based conflict may also provide additional insight when their direct and moderating effects are examined in relationship to CSE and informal learning.
Conclusion

This study looked at the effects of Core Self-Evaluations, Work Family Conflict, and their interaction, on informal learning. Based on the results of a survey administered to a sample of casual family-restaurant chain managers \((n=225)\), significant relationships were found between CSE and informal learning as well as WFC and CSE. Additionally, WIF was a significant predictor of informal learning as well as a significant moderator of CSE's relationship with informal learning. There were limitations to this study, including survey design and the lack of demographic information; however, other limitations lend themselves to additional research in this area. These include longitudinal studies, especially involving additional dimensions of WFC, and cross-industry and cross-organizational studies involving additional observations and studies of additional personality variables and measurements. Finally, considerations for several areas of HR management and development were offered in order to increase informal learning, including a look at recruitment and selection, organizational and job design and development, and formal training and development programs.
References


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Appendix A: Informal Learning Measurement

Consider the past three months. How often during a typical work week have you engaged in the activities below in order to learn and help you better perform your job?

1. Never
2. Rarely
3. Sometimes
4. Frequently
5. All the time

Learning through Self
1. Experimenting with new ways of performing my work
2. Reflecting about how to improve my performance
3. Using trial and error strategies to learn and better perform

Learning from Others
1. Interacting with my superiors
2. Interacting with a mentor
3. Interacting with my peers

Learning from Non-Interpersonal Sources
1. Reading professional magazines or vendor publications
2. Searching the internet for job relevant information
3. Reading management books
Appendix B: Judge, et al.’s Core Self-Evaluation Measurement

Instructions: Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item by placing the appropriate number on the line preceding that item.

1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly Agree

1. I am confident I get the success I deserve in life.
2. Sometimes I feel depressed. (r)
3. When I try, I generally succeed.
4. Sometimes when I fail I feel worthless. (r)
5. I complete tasks successfully.
6. Sometimes, I do not feel in control of my work. (r)
7. Overall, I am satisfied with myself.
8. I am filled with doubts about my competence. (r)
9. I determine what will happen in my life.
10. I do not feel in control of my success in my career (r)
11. I am capable of coping with most of my problems.
12. There are times when things look pretty bleak and hopeless to me. (r)

(r) = reverse-scored
Appendix C: Carlson, et al.’s Work-Family Conflict Measurement

*Note: Only Time-Based Work-Family Conflict items included.*

1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly Agree

Time-based work interference with family
1. My work keeps me from my family activities more than I would like.
2. The time I must devote to my job keeps me from participating equally in household responsibilities.
3. I have to miss family activities due to the amount of time I must spend on work responsibilities.

Time-based family interference with work
1. The time I spend on family responsibilities often interferes with my work responsibilities.
2. The time I spend with my family often causes me not to spend time in activities at work that could be helpful to my career.
3. I have to miss work activities due to the amount of time I must spend on family responsibilities.
Appendix D: Histograms Summarizing Raw (Uncentered) Variables

Figure 4. Histogram, Core Self-Evaluations ratings (n=225)

Figure 5. Histogram, Work Interference with Family ratings (n=225)
Figure 6. Histogram, Family Interference with Work ratings ($n=225$)

Figure 7. Histogram, Informal Learning ratings ($n=225$)
Appendix D: Descriptive Statistics of Individual Measures/Scale Items

Table 6. Means, Standard Deviations and Intercorrelations Among Informal Learning Scale Items

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$n = 225$. All intercorrelations listed are significant at $p < .01$. 

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Table 7. Means, Standard Deviations and Intercorrelations Among Core-Self Evaluation Scale Items

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<td>.49</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4.55</td>
<td>0.60</td>
<td>.28</td>
<td>.46</td>
<td>.19</td>
<td>.31</td>
<td>.35</td>
<td>.43</td>
<td>.18</td>
<td>.28</td>
<td>.36</td>
<td>.56</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4.40</td>
<td>0.55</td>
<td>.30</td>
<td>.49</td>
<td>.29</td>
<td>.37</td>
<td>.31</td>
<td>.28</td>
<td>.26</td>
<td>.30</td>
<td>.43</td>
<td>.41</td>
<td>.50</td>
<td>---</td>
</tr>
</tbody>
</table>

n = 225. All intercorrelations listed are significant at p < .01.

Table 8. Means, Standard Deviations and Intercorrelations Among Work Family Conflict Scale Items

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. WIF 1</td>
<td>3.73</td>
<td>1.08</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. WIF 2</td>
<td>3.26</td>
<td>1.13</td>
<td>.72*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. WIF 3</td>
<td>3.67</td>
<td>1.08</td>
<td>.82*</td>
<td>.67*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. FIW 1</td>
<td>1.95</td>
<td>1.01</td>
<td>.02</td>
<td>.08</td>
<td>.03</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. FIW 2</td>
<td>1.89</td>
<td>0.99</td>
<td>.03</td>
<td>.09</td>
<td>.01</td>
<td>.83*</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>6. FIW 3</td>
<td>1.72</td>
<td>0.94</td>
<td>-.02</td>
<td>.05</td>
<td>-.04</td>
<td>.78*</td>
<td>.85*</td>
<td>---</td>
</tr>
</tbody>
</table>

n = 225.
* p < .01.
Appendix F: Influential Regression Observations

Using the regression analysis summarized in Table 3, residuals and other diagnostic measures were examined. Table 5 shows six influential observations discovered in this examination. To qualify as an influential observation, it must have had a Cook's Distance of over 0.05 or a combination of a studentized residual of over ±2.00 and a Cook's Distance of over 0.035.

<table>
<thead>
<tr>
<th>Obs</th>
<th>Studentized Residual</th>
<th>Cook's Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.118</td>
<td>0.063</td>
</tr>
<tr>
<td>2</td>
<td>-3.194</td>
<td>0.039</td>
</tr>
<tr>
<td>3</td>
<td>-3.794</td>
<td>0.047</td>
</tr>
<tr>
<td>4</td>
<td>-2.219</td>
<td>0.038</td>
</tr>
<tr>
<td>5</td>
<td>2.089</td>
<td>0.132</td>
</tr>
<tr>
<td>6</td>
<td>-0.62</td>
<td>0.064</td>
</tr>
</tbody>
</table>

Table 9. Influential Observations in the Data

The intent of identifying these influential observations was to make the analysis more rigorous; this would imply a reduced omnibus $F$ value and $R^2$. However, the regression model run without these six observations actually showed an increase in the omnibus $F$, $R^2$, and levels of significance of
individual predictor variables (Table 6). Therefore, these observations were left in the dataset for hypothesis testing.

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>0.49***</td>
<td>3.00</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>WIF</td>
<td>0.19</td>
<td>1.30</td>
<td>0.20</td>
</tr>
<tr>
<td>FIW</td>
<td>0.32**</td>
<td>2.31</td>
<td>0.02</td>
</tr>
<tr>
<td>CSE x WIF</td>
<td>-0.25**</td>
<td>-2.55</td>
<td>0.01</td>
</tr>
<tr>
<td>CSE x FIW</td>
<td>-0.19*</td>
<td>-1.85</td>
<td>0.07</td>
</tr>
</tbody>
</table>

\[ F(5,213) = 14.46, p < 0.01, R^2 = 0.18 \]

*** p < .01, ** p < .05, * p < .10

Table 10. Regression results with influential observations removed (n=219)