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Training Transfer Behaviors: The Roles of Trainee Confidence, Knowledge, and Work Attitudes

Oriel J. Strickland, James Santiago, Stacey Fuller, Pedro Dueñas

Transfer of training refers to the extent to which desired work behaviors are transferred to the workplace following training. This study evaluated training transfer ratings as a function of trainee variables following training (confidence and knowledge) and work attitudes and evaluations (job satisfaction and transfer climate). Consistent with the literature, positive associations with transfer were hypothesized. Training was developed to align transfer behaviors with organizational goals. Subsequently, a questionnaire was distributed to 109 employees of a natural foods grocery store. The data yielded partial support for hypotheses. Although trainee variables and job satisfaction were positively related to transfer of training, transfer climate was not. Also consistent with the literature, the frequency of transfer behaviors was fairly low, and varied as a function of department and employment status. Implications for theory and practice based on the findings are discussed.

Overt Narcissism and Approach-Avoidance Motivation: Expanding the Lens to Examine Goal Orientation

Megan W. Gerhardt, Huy Le

The current study investigated the mediating effect of self-esteem in the relationship between overt narcissism and approach-avoidance goal orientations. Utilizing a sample of 958 participants, analyses revealed a slight suppression effect between overt narcissism and performance approach goal orientation, and a full mediation effect between overt narcissism and performance avoidance goal orientation. Such results indicate a differential effect for the role of self-esteem in approach versus avoidance motivation.

Managing With Empathy: Can You Feel What I Feel?

Rebecca L. Somogyi, Aaron A. Buchko, Kathleen J. Buchko

Empathy is the ability “to sense the other’s private world as if it were your own but never losing the ‘as if’ quality” (Rogers, 1957). We suggest that this ability has been overlooked as a potentially useful construct for management. We review the literature to provide a conceptual definition of empathy and to develop an understanding of the effect empathy might have on managerial practice. We develop a framework for the application of empathy to management, suggesting methods to develop the empathic abilities of managers in ways that will produce positive organization outcomes. Implications for researchers and practitioners are discussed.
The Influence of Individual Values on Work-Family Conflict: 
The Roles of Materialism and Postmaterialism

Mark D. Promislo

The question of how one’s values influence work-family conflict is a recent area of inquiry. This study had two aims: to explore whether the values of materialism and postmaterialism were associated with work-family conflict; and to assess the relationship between the two values themselves. A total of 217 working adults were surveyed regarding their values and perceived role conflict. Materialism was positively associated with both directions of work-family conflict, but no relationship was seen with postmaterialism. The interaction between materialism and postmaterialism was not significant. The findings demonstrate the importance of considering values in the context of work-family conflict.

Improving Case-Based Learning with Clear Content and Simple Presentation

Lauren N. Harkrider, Zhanna Bagdasarov, Alexandra E. MacDougall, James F. Johnson, Lynn D. Devenport, Michael D. Mumford

Although cases are frequently used in business education, little is known about how the content and presentation of cases influence learning and performance. This article overviews eight studies which empirically tested how specific content as well as processes for working through case material influence case-based learning and transfer. Overall, these studies reveal the importance of structuring cases in a manner that simplifies learning, clearly emphasizing key concepts within the case content and concisely presenting case material as to focus attention on learning underlying principles useful in future situations. The direct implications for improving the effectiveness of case-based learning are discussed.

Organisational Resilience: Testing the Interaction Effect of Knowledge Management and Creative Climate

Samuel Mafabi, John C. Munene, Augustine Ahiauzu

Based on the premise that both knowledge management and creative climate influence the level of organizational resilience, this study examined the extent to which creative climate moderates the relationship between knowledge management and organizational resilience. Cross sectional data were collected from 51 parastatal organizations in Uganda to test the hypotheses. The study provides empirical evidence on the interaction effect of knowledge management and creative climate on organizational resilience in a public sector. The evidence shows that knowledge management does not interact with creative climate to influence the level of organizational resilience.

Examining the Effect of the Conflict Management Strategies on Job Performance

Nermine Magdy Atteya

The rapid globalization of modern business and the challenges to reach sales objectives pose major issues for human resource management. One important area that has yet to be fully explored is the management of conflict between sales and marketing functional areas. We hypothesize that: 1) marketing and sales task conflict is more likely to involve distributive (win–lose) issues and 2) when win–win (integrative) potential exists, the disputants are more likely to approach conflict from a fixed-pie perspective. Our analysis of data collected from food manufacturing industry supports this hypothesis. The application of different conflict management strategies varies depending on whether they are applied to sales or marketing task conflict. The importance of aligning conflict management strategies with the integrative potential of sales and marketing tasks is presented to managers.
The majority of studies focusing on enhancing item bank security and measurement efficiency in computer adaptive tests (CATs) have featured large item banks consisting of thousands of items. For many practitioners of high-stakes tests, CATs are a viable alternative to static forms, but inadequate resources exist for developing expansive item libraries. Practitioners may need to consider alternative solutions for maintaining CAT integrity and proficiency. This study documents the effects of changing the size of minimum eligible item pools for selection on test length, maximum exposure frequency, and total item usage across four operational item banks of various size and quality.
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Training Transfer Behaviors: The Roles of Trainee Confidence, Knowledge, and Work Attitudes

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Transfer of training refers to the extent to which desired work behaviors are transferred to the workplace following training. This study evaluated training transfer ratings as a function of trainee variables following training (confidence and knowledge) and work attitudes and evaluations (job satisfaction and transfer climate). Consistent with the literature, positive associations with transfer were hypothesized. Training was developed to align transfer behaviors with organizational goals. Subsequently, a questionnaire was distributed to 109 employees of a natural foods grocery store. The data yielded partial support for hypotheses. Although trainee variables and job satisfaction were positively related to transfer of training, transfer climate was not. Also consistent with the literature, the frequency of transfer behaviors was fairly low, and varied as a function of department and employment status. Implications for theory and practice based on the findings are discussed.

INTRODUCTION

Training has been defined as a proactive organizational effort aimed at increasing employee learning toward desired organizational outcomes (Noe, 2010; Colquitt, Lepine, & Noe, 2000). Key aspects of this definition show that training is used to direct employees toward the knowledge and methods that are desired by the organization. Organizations in the United States spend millions of dollars annually on training employees as a way to improve job performance and increase profits (e.g., Velada, Caetano, Michel, Lyons, & Kavanagh, 2007; Noe, 2010).

As organizations invest so much time and money in their employees, it is important to use best practices to ensure that the training will result in meaningful outcomes for the organization. Two such practices (e.g., Brown & Sitzmann, 2010) are to incorporate strategic business goals within training, and
to address how knowledge and skills learned during training will be applied back to the job, a process known as training transfer (Baldwin & Ford, 1988; Baldwin, Ford, & Blume, 2009).

The purposes of this study are to document and explore an organization’s attempt to incorporate strategic business goals into training, and to identify and measure specific training transfer behaviors to meet these goals. A follow-up investigation was conducted to assess the extent to which employees were subsequently engaged in those transfer behaviors. The model of training transfer specified by Grossman and Salas (2011) will be used to highlight and evaluate the findings of this study.

Transfer of Training

Baldwin and Ford (1988) seminal paper emphasized the “transfer problem”, which describes how training efforts can be unsuccessful because there is no effort to ensure that trained behaviors are exhibited on the job site. To quantify the transfer problem, these authors cite data that of the hundreds of millions of dollars spent on training in the United States, only approximately 10% translates back to behavioral changes that are transferred to the job. Wexley and Latham (2002) have also investigated an aspect of the transfer problem, wherein behavioral transfer fell from 40% immediately following training to 25% after six months, and to 15% after one year.

Since the publication of Baldwin and Ford’s (1988) influential paper, many empirical and theoretical papers have documented the variables that are predictive of training transfer (Garavaglia, 1995; Kontoghiorghes, 2004; Baldwin, Ford, & Blume, 2009). Grossman and Salas (2011) compiled a narrative review of the most influential variables regarding the extent to which training transfer occurs. These include factors related to the trainee, the training itself, and the work environment. In terms of trainee characteristics that predict transfer, research has generated empirical support for the role of cognitive ability (Burke & Hutchins, 2007; Velada et al., 2007), self-efficacy (Chiaburu & Linday, 2008), motivation (Tziner, 2007), and the perceived utility of training (Valada et al., 2007). One of the purposes of this study is to provide additional empirical support to some of the variables specified in these models. The model specified by Grossman and Salas (2011) was also used to build features into the training itself to maximize the likelihood of training transfer. These features will be described in the following section. Finally, aspects of the work environment specified in the model (Grossman & Salas, 2011) were included in the current study to help predict training transfer.

Organizational Setting: Strategic Business Goals and Transfer Objectives

There are several unique aspects of this study. One was the translation of overall strategic business goals into specific training transfer behaviors. Another was the use of the existing knowledge base regarding training transfer to build a training and evaluation program. This study was conducted in collaboration with managers of a natural foods cooperative grocery store in a large metropolitan city. Managers at the organization were interested in aligning training efforts with the strategic objective of raising member ownership for the Co-op. As such, training programs were implemented to inform employees about information that would encourage shoppers to invest in store ownership. More specifically, the overall fiscal health of the organization is a direct function of the dollar amount invested into the store by community members/shoppers. Transfer behaviors that would encourage community members to invest were developed in collaboration with department managers.

A training program was designed and implemented on twelve different dates to accommodate employee schedules for all store employees. This program incorporated knowledge from the research literature to maximize training transfer (Grossman & Salas, 2011). For instance, the desired transfer behaviors were first presented and modeled, allowing for social learning to occur (Taylor, Russ-Eft, & Chan, 2005). Trainees then engaged in role-playing, practicing the trained behaviors in simulations of customer interactions. Errors and problems encountered in executing the behaviors were then discussed and resolved (Heinbeck, 2003).

One year following training, a survey was distributed to all employees to assess transfer behaviors, and measures of theoretically-backed variables that have been shown to relate to transfer. Due to practical constraints with distributing a survey at the job site, only the variables of most interest to the organization
were chosen for inclusion in this study. These variables will be reviewed in the following section. Information from this study served a dual function in addressing the research literature as well as formative evaluation of the training program. Finally, this study included informal communication with trainees was conducted to evaluate their experiences with implementing transfer behaviors on the job.

Predictors of Training Transfer and Hypotheses

One of the variables that has been shown to relate to transfer of training is the “transfer climate” of the working environment. Research has documented that there are a variety of climates that affect organizational behavior, including climate for safety, climate for harassment, as well as climate for training transfer (Baldwin & Ford, 1988). Aspects of psychological climate are thought to operate by setting norms and expectations for associated behavior. These norms are enforced by management and taught to new hires, further enforcing the strength of the climate. Transfer climate is considered to exhibit a direct influence on training transfer, along with managerial and technological support (Colquitt, Lepine, & Noe, 2000). Research has documented a number of findings and theories regarding transfer climate. Studies have demonstrated the relationship between transfer climate on perceived learning and actual transfer to the job (e.g., Lim & Morris, 2006), and that the link between safety knowledge and safety performance is a function of the transfer climate (Smith-Crowe, Burke, & Landis, 2003). Consistent with prior research, it is hypothesized that transfer climate would be positively related to transfer of training.

Work attitudes such as job satisfaction have been studied in terms of their relationship with training transfer (e.g., Baldwin & Ford, 1988; Garavaglia, 1995; Kontoghiorghes, 2004). Job satisfaction is the affective and cognitive evaluation one has towards the job and its components. In addition to theoretical suggestions that a more favorable job attitude will lead to more enthusiastic transfer behavior, research has indicated an empirical link between job satisfaction and transfer of training (Velada & Caetano, 2007; Jodlbauer, Selenko, Batinic, & Stiglbauer, 2012). Consistent with this research, it is hypothesized that job satisfaction would be positively related to transfer of training.

Another set of variables that has been implicated in training transfer is the extent to which the trainees learn the material and have confidence in their abilities to implement it (e.g., Baldwin & Ford, 1988; Garavaglia, 1995; Kontoghiorghes, 2004). In fact, the guidelines of training evaluation developed by Kirkpatrick in 1967 specify that what takes place during the training process (learning criteria) will affect subsequent transfer (behavioral criteria). More specifically, greater learning will be associated with greater transfer. These guidelines developed by Kirkpatrick have been used in numerous studies as a theoretical foundation to expand upon in the topic of transfer of training (Velada & Caetano 2007; Wickramasinghe, 2006).

In the current study, trainee confidence was considered in terms of the extent to which the trainee felt confident in their ability to successfully accomplish each of the training learning objectives. It is similar to the concept of performance self-efficacy (Holton, Bates, & Ruona, 2000; Chiaburu & Lindsay, 2008), although this is a more generalized belief in one’s ability to change performance outcomes according to conditions. Consistent with this research, it is hypothesized that knowledge learned during training and confidence about this knowledge will be positively related to transfer of training.

METHOD

Participants

A total of 150 employees from the store were recruited for participation in this study. Participation was voluntary, and strongly encouraged by the human resources department of the organization. Of those recruited, 109 employees participated, yielding a response rate of 72.7%.

The background characteristics of the employees are reported in Table 1. Of the participants, 34.9% were male, 61.5% were female, and 3.7% did not indicate their gender. In terms of age ranges, 4.6% of participants indicated they were less than 20 years old, 40.4 between the age of 20 and 29, 26.6% between the ages of 30 and 39, 11.9% between the age of 40 and 49, 11.0% between the age of 50 and 59, 3.7% older than 60 years of age, and 1.8% did not indicate their age. The largest percentage of respondents,
38.5%, worked at the Front End, 11.9% worked in the Deli, followed by 10.1% working in Grocery. The majority of the participants indicated their employment status was part-time (60.6%), whereas 30.3% indicated their employment status was full-time, and 9.2% did not provide information about their employment status.

**Procedure**

Participants received a memo asking them to visit the human resources office to complete a voluntary survey regarding training they had received. There, they were given an Informed Consent form. All signed forms were kept in a sealed envelope to protect the participant’s confidentiality. Employees were then given the survey and a writing instrument, followed by a debriefing form. All participants were treated in full accordance of the APA’s Ethical Treatment Guidelines.

**Measures**

The first section of the questionnaire consisted of employment background questions, such as gender, age range (to respect privacy and confidentiality an age range was used rather than a specific year), employment status (full-time or part-time), and department.

**Transfer Climate**

Transfer climate was assessed using a 10-item Likert-type scale in which the employee is asked to indicate their agreement with each item (Tziner, Fisher, Senior, & Weisber, 2007). A high score on this measure indicates that the work environment of the participants is supportive of the transfer of training (e.g., My boss will be willing to discuss any problem I encounter in my attempts to apply the new knowledge and skills I have acquired in the course to my job). Cronbach’s alpha for this measure was .86.

**Trainee Confidence**

The confidence variable was assessed per the training learning objectives, and as such was specific to this study. For each of the learning objectives, the participant was asked to use a five-point Likert-type scale (1 = Strongly Disagree, 5 = Strongly Agree) to assess confidence that he or she could successfully explain or perform the objective (e.g., I am confident that I would be able to…Explain the financial payment options for becoming an owner). The internal consistency reliability for this measure (Cronbach’s alpha) was .89.

**Trainee Knowledge**

The next section of the questionnaire consisted of eight items developed by management that tested knowledge of the training material (e.g., To be eligible for the Co-op Owner Worker discount, co-op owners must work ___ hours per month.) Participants could have a score of 0 if they missed all the items, or an 8 if they got all of them correct.

**Job Satisfaction**

Job satisfaction was assessed by using the short form of the Job Descriptive Index (Smith, Kendall, & Hulin, 1969). Participants were asked to provide a response of Yes, No, or ? to each of 8 adjective terms that may describe their jobs (e.g., good, poor, disagreeable, excellent, enjoyable).

**Transfer Ratings**

This section of the questionnaire consisted of six potential transfer behaviors to determine the aspects of the training program that the participants have used on the job. The participant was asked to check all the transfer behaviors that they had used at any time during the previous six months (e.g., Talked to customers about ownership; supported an ownership drive). Thus, transfer ratings could range from 0 (none of the behaviors) to 6 (all of the behaviors).
RESULTS

Employment Variables
An area of interest to the organization was whether there were employment-level variables that would suggest improvements to the training, or highlight the need for additional training among selected groups. Descriptions of employment variables can be found in Table 1. One such variable of interest was whether there were transfer differences as a function of the employees’ department. A one-way between subjects analysis of variance (ANOVA) was conducted with transfer score as the dependent variable and department as the independent variable. The effect of department category was significant, \( F(9,92) = 3.23, p = .01 \), partial \( \eta^2 = .24 \). Tukey’s post hoc comparison revealed that transfer scores were significantly higher in the marketing department than all other groups. This is intuitively correct, because a key feature of the day-to-day job requirements for those in the marketing department involves making connections to members of the community to encourage membership.

The only other employment variable that significantly related to training transfer was employment status (full-time versus part-time). The results of a one-way ANOVA revealed a significant effect of employment status \( F(1,95) = 13.16, p < .01 \), such that full-time employees (M=3.53, SD=1.12) were more likely to engage in transfer behaviors than part-time employees (M=2.13, SD=1.30). With more on-the-job exposure to members of the community, it is logical that full-time employees would yield greater transfer behaviors.

Tests of Hypotheses
Correlation analyses (see Table 2) were conducted to determine the strength of the linear relationships between transfer of training and the predictor variables included in this study: trainee evaluations of confidence, knowledge, job satisfaction, and transfer climate. The alpha level was set at the traditional level of .05 to test for statistical significance.

Table 2 provides the results of the correlation analysis as well as the means and standard deviations for the predictor and continuous criterion variables. It is worth noting that the mean values for the transfer measure were quite low: a mean of 2.41 (SD = 1.46) out of a possible (and desired) six transfer behaviors. This finding will be addressed in the Discussion. Results of the correlation analysis indicated that transfer of training had the strongest relationship with trainee confidence \( (r = .37, p < .01) \), followed by job satisfaction \( (r = .31, p < .01) \) and knowledge about the training \( (r = .28, p < .01) \).

Multiple Regression
Multiple regression analysis was conducted with transfer of training as the dependent variable (see Table 3). Significant employment variables (employment status, and department) were entered in the first step, trainee variables in the second step (confidence and knowledge), and work attitudes and evaluations (job satisfaction and transfer climate) in the third step. The first step accounted for approximately 14% of the variance in scores \( (R^2 = .15) \) and was statistically significant, \( F(5,75) = 2.54, p < .05 \). As stated above, employment status \( (\beta = .84, p < .05) \) contributed significantly to the prediction of transfer, in that full-time employees were more likely to transfer training.

In the second step of the model, the confidence and knowledge variables were added to the regression equation. With the additional variables included in the analysis, the predictors now accounted for approximately 26% of the variance in scores \( (R^2 = .26) \). This was also significant, \( F(7,73) = 3.70, p < .05 \), with knowledge \( (\beta = .30, p < .05) \) demonstrating a significant effect on transfer.

In the third step job satisfaction and training climate were included. These predictors accounted for an additional 4% of the variance, bringing the total amount of variance accounted for to approximately 30% \( (R^2 = .30) \). Again, this was significant, \( F(9,71) = 3.38, p < .05 \). Although the overall prediction of transfer was significant, much of the variance around transfer was not explained by these models.
DISCUSSION

This study provided a real-world assessment of transfer within a training program that was built to align strategic organizational goals with trainee behaviors on the job. At a fundamental level, the data replicated previous findings (e.g., Wexley & Latham, 2002; Baldwin & Ford, 1988) regarding the low occurrence of training transfer. Respondents indicated that they had only engaged, on average, in 2.5 of the six desirable transfer behaviors in the previous six months. This is particularly troubling for this organization, because these transfer behaviors were deemed critical for its business success: obtaining more member owners and their financial investments.

Informal communication (after the formal study) with employees suggested that there was a problem with engaging in these transfer behaviors because of the other demands of their workload. In fact, research (Belling, James, & Ladkin, 2004) has documented barriers to the effectiveness of training, and most of these involve a work environment that is not supportive in various ways (e.g., communication processes are poor, supervision is ineffective, or there is not adequate opportunity to use training on the job). It is clear that the working environment must be conducive to the use of training on the job.

However, in this study, results did not support the hypothesized link between transfer climate and transfer. Although employees generally found the transfer climate to be supportive, they felt that there were too many responsibilities in their daily tasks to take the time to pursue behaviors related to member ownership (which often required them to engage in conversation and/or provide written information to customers). In cases such as these, it may be important to re-prioritize the transfer behaviors deemed critical for the strategic mission of the organization as more essential than other daily tasks. Supervisory feedback and the reward system of the organization could be used to help establish priorities. Further research is needed to explore the role of transfer climate, conflicting tasks, and reward structures under conditions of a hectic work environment.

A potentially related program of research concerns the “line of sight” of training information (Boswell, 2006), referring to the degree to which employees can directly see the relevance of training material to their day-to-day job functioning. Researchers (Hatala & Fleming, 2007) have highlighted the importance of visibility in establishing training transfer as work norms. This makes sense in light of some of the other findings in this study. For instance, employees in the marketing department (who work frequently on member owner programs) provided significantly higher transfer ratings. Similarly, full-time employees who may be more concerned with organizational initiatives provided significantly higher transfer ratings, suggesting that additional training or rewards systems could be directed toward part-time workers. Organizations may increase line of sight through communication tactics, or by additional inquiries into transfer behaviors that enhance the strategic mission of the organization. For instance, recent research (Saks & Burke, 2012) has shown that simply conducting training evaluations (behavioral and results) can function to increase training transfer.

There are several methodological limitations of this study that could be addressed in future research. These limitations are inherent to survey data. One such limitation of this study is its correlational nature. This type of research does not allow for statements about causal links. Research in controlled laboratory settings could be conducted to allow for a stronger inference of causation between study variables. This study was also limited by its use of self-report measures as the sole method of data collection. The possibility of common method bias could be reduced by introducing varying types of measurement of training transfer. For instance, transfer activities could be evaluated by objective data (such as the number of new members recruited) or by managers, instead of relying on employee self-report information.

In sum, this paper provided a longitudinal assessment of a training program designed to enhance training transfer towards organizational objectives. Despite considerable investment into the training program and its evaluation, trainee reports of their transfer behaviors provided evidence of the “transfer problem”. The data from this study hinted at the importance of line-of-sight features as keys to raising transfer. Future research is needed to assess such approaches to raising training transfer within different work environments.
REFERENCES


### TABLE 1
FREQUENCY AND PERCENT FOR CATEGORICAL EMPLOYMENT VARIABLES

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### TABLE 2
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Note. * p < .05, ** p < .01
### TABLE 3
REGRESSION ANALYSIS FOR TRAINING TRANSFER

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Note. * p < .05, ** p < .01
Overt Narcissism and Approach-Avoidance Motivation: Expanding the Lens to Examine Goal Orientation

Megan W. Gerhardt
Miami University

Huy Le
University of Nevada-Las Vegas

The current study investigated the mediating effect of self-esteem in the relationship between overt narcissism and approach-avoidance goal orientations. Utilizing a sample of 958 participants, analyses revealed a slight suppression effect between overt narcissism and performance approach goal orientation, and a full mediation effect between overt narcissism and performance avoidance goal orientation. Such results indicate a differential effect for the role of self-esteem in approach versus avoidance motivation.

“To love oneself is the beginning of a lifelong romance.”—Oscar Wilde

INTRODUCTION

It has taken decades to begin to unravel the mysterious nature of a narcissistic personality. Research exists that postulates narcissists are embedded with high levels of self-esteem and self-love (Rhodewalt, Madrian, & Cheney, 1998; Rhodewalt & Morf, 1995; Watson, Hickman, & Morris, 1996; Watson, Little, Sawrie, & Biederman, 1992), that narcissists are instead maladjusted, fragile shells suffering from debilitating low-self esteem that could crumble at any time (Cooper & Ronningstam, 1992; Kernberg, 1975), and still more research discussing that the self-esteem of narcissists depends primarily on the type of narcissism being displayed (Wink, 1991; Emmons, 1984; Kernis & Sun, 1994; Morf & Rhodewalt, 1993).

The current consensus in the literature is that narcissism has both adaptive and maladaptive properties. According to Foster and Trimm (2008), narcissists can be positive, confident, secure, and perform well under high levels of pressure (i.e. Bradlee & Emmons, 1992; Emmons, 1984; Foster & Campbell, 2005; Wallace & Baumeister, 2002), as well aggressive and failing to learn from mistakes (i.e. Bushman & Baumeister, 1998; Campbell, Goodie, & Foster, 2004).

Research has further clarified that narcissism may occur along a type of continuum of adjustment, and can be classified as either overt or covert. Overt narcissism tends to be more adaptive (though not completely so), whereas covert narcissism is mostly maladaptive (Rose, 2002). This differentiation was noted after early research on narcissism was confounded with contradictory, puzzling results. It was determined that some measures of narcissism were correlating positively with desirable outcomes, such as well-being, whereas other measures of the construct were yielding negative relationships (Wink, 1991).
The Narcissism Personality Inventory (NPI; Raskin & Terry, 1988), by far the most widely used measure to assess narcissism, is widely supported as a measure of overt, rather than covert narcissism (Kubarych, Deary, & Austin, 2004; Rose, 2002; Rathron & Holstrom, 1996). The current study focuses specifically on the presence and dynamics of overt narcissism as it relates to self-esteem and approach-avoidance motivation.

Narcissism and Self-Esteem

The relationship between narcissistic personality and self-esteem has also been difficult to untangle. While overt narcissism is positively correlated to self-esteem (Rose, 2002; Campbell, 2001; Watson et al., 1992, Watson et al., 1996), there is a crucial difference between the two: narcissism is detrimental to interpersonal relationships, whereas self-esteem is considered beneficial. Bushman and Baumeister (2002) examined both narcissism and self-esteem in samples of violent offenders as compared to controls, and found significantly higher levels of narcissism, but not self-esteem. Similarly, (Barry, Grafeman, Adler, and Pickard (2007) found significantly higher levels of narcissism, but not self-esteem, in a sample of delinquent juveniles as opposed to non-delinquents.

Campbell, Rudich, & Sedikides (2002) investigated the nature of the narcissism-self-esteem overlap, finding that while narcissism and self-esteem share several crucial elements (such as a perception that they are more intelligent and extraverted than others), individuals with high self-esteem also perceived themselves as being higher in traits such as agreeableness and morality. Campbell et al (2002) summarized these differences by stating that those high in narcissism perceived themselves as superior to others on agentic traits, whereas those high in self-esteem perceived themselves superior to others on both agentic and communal traits. Therefore, it appears there are both interesting overlaps as well as distinctions between narcissism and self-esteem.

Approach-Avoidance Motivation

Several intriguing studies have begun to delve into how narcissistic personality relates to approach-avoidance motivation (Foster & Trimm, 2008; Carver & White, 1994; Conner et al, 2004). Across measures, narcissism has been found to positively relate to approach motivation, whereas it has been consistently found to relate either in a negative or non-significant way to avoidance motivation. These studies suggest that narcissists are driven largely by reward—in this case, the reward of approaching situations where they can demonstrate superiority over others, and seem less driven or insensitive to the threat of punishment (Foster & Trimm, 2008). However, we are aware of little research to date that empirically investigates the relationship between narcissism and approach and avoidance goal orientations.

Based on the pattern of results that have been uncovered in these initial studies, Foster and Trimm (2008) suggested future research continue to explore how narcissistic personality may relate to other measures of approach and avoidance motivation. In the current study, we aim to answer this call by exploring the nature of the relationships between narcissism and performance-approach goal orientation as well as performance-avoidance goal orientation.

Approach-Avoidance and Goal Orientation

The ideas of approach and avoidance motivation are inherent in almost all conceptualizations of motivation since the beginning of modern psychology (Elliot, 1989). In the most basic terms, theories of human motivation from James (1890) through McClelland (1951) to Elliot (1989) have included some kind of representation of the inherent human tendency to direct behavior toward desirable outcomes and away from undesirable ones, also known as “appetitively” or “adversively” motivated behavior, respectively (Foster & Trimm, 2008).

As stated by Eliott (1989), “From the advent of psychology as a discipline, most, if not all, of the major theorists who proposed conceptualizations of motivation incorporated approach-avoidance concepts or principles” (p. 171). Approach motivated behavior is guided by the potential for obtaining a positive outcome, wherein avoidance motivation is guided by the possibility of a negative outcome. These
motivational systems appear to operant independently of one another, and are associated with distinct processes and outcomes.

The very earliest models of achievement goal orientation (Dweck, 1986; Nichols, 1984) integrated the distinctions of approach and avoidance motivations into their original descriptions of individual goal orientations. However, over time, the focus of these goal models shifted toward other aspects, and the role of approach and avoidance was largely ignored (Elliot, 1999).

However, as interest and research in goal orientations grew, the importance of the approach and avoidance distinction once again surfaced. While growing research on the outcomes of mastery goals yielded fairly consistent and positive results, the early research results on the outcomes of performance goal orientations were often contradictory and confusing, with performance goals sometimes being positively related to intrinsic motivation and positive work outcomes, and other times yielded null or equivocal results (Elliot, 1994).

The muddy nature of performance goal orientations led Elliot and colleagues to introduce a trichotomous framework of achievement goal orientations (Elliot, 1994; 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996). While the concept of mastery goals remained largely the same as in previous models, performance goal orientations were separated into two types: performance-approach (focus on attaining levels of normative competence) and performance-avoidance (focus on avoiding normative incompetence), once again integrating the essential concepts of approach and avoidance motivation.

Narcissism and Achievement Goal Orientation

The complexities of narcissism and self-esteem create a potentially interesting dynamic in terms of understanding the processes that may underlie narcissists’ choices of achievement situations. Elliot (1999) postulated that individual difference variable would be quite likely to affect achievement goal adoption, specifically mentioning self-esteem. He further stated, “…in general it may be stated that performance goals (both approach and avoidance) are more likely to be linked to self-based and relationally based variables, given that the pursuit of such goals often entails self-focused attention and the goals themselves are inherently interpersonally orientated” (p. 175). Indeed, any individual difference construct that represents a tendency to direct attention toward a positive or negative stimuli would most likely influence one’s achievement goal motivation (Elliot & Sheldon, 1997).

Given the extensive prior research establishing the connection between narcissism and approach-avoidance tendencies, it seems likely that narcissism would have a significant impact on achievement goal orientations. Elliot and Sheldon (1997) stated that dispositional constructs that represent a predisposition toward either positive or negative stimuli would likely have important influence on the adoption of particular achievement goals.

Subsequently, several theoretical explanations and empirical investigations have been conducted to explore how narcissism may relate to achievement goals. Morf and Weir (2000) examined the role of narcissistic dynamics in motivation, finding that those high in narcissism tended to prefer achievement situations where they could demonstrate superiority over others, and that they were primarily concerned with their performance relative to others. The theoretical underpinnings of these findings can be traced back to Kohut (1971) and Kernberg (1975), who suggested that narcissists that the cognitive-affective processing dynamics of narcissists are driven by a “chronic need to obtain external validation for their overly positive self-views, because these rest on an essentially fragile and weak internalized self-structure” (Morf & Weir, 425).

Subsequently, narcissists tend to seek out goals that have ego-involvement, and that provide them opportunities to demonstrate their superiority over other people. Morf and Weir conclude that narcissists are more likely to pursue performance-approach goals, and previous research has found positive relationships between narcissism and approach motivation. Based on the patterns present in past research, we hypothesize:
**H1: There will be a positive relationship between overt narcissism and performance-approach goal orientation.**

Past research suggests that narcissists will be unlikely to avoid highly evaluative situations (Morf & Rhodewalt, 2001), as they are motivated primarily by reward, rather than by punishment. Empirical results have shown a negative relationship between narcissism and avoidance motivation, as measured by several different assessments (Foster & Trimm, 2008). While previous work has not specifically examined performance-avoidance goal orientation, we anticipate a similar pattern of results using this measure.

**H2: There will be a negative relationship between overt narcissism and performance-avoidance goal orientation.**

**Self Esteem as a Mediator**

Self-esteem has previously been studied as a mediating variable between narcissism and a variety of outcomes. Rose (2002) explored the mediating effect of self-esteem in the relationships between narcissism and well-being, and found self-esteem to have a fully mediating effect.

Elliot (1999) suggested that antecedent variables of achievement goal orientations (in this case, narcissism and self esteem) would likely combine together to “jointly and interactively predict achievement goal adoption” (p. 176). Payne, Youngcourt, and Beuaebein (2007) stated that while there “does not appear to be a strong theoretical rationale for a direct relationship and goal orientation” (131), several empirical pieces of research have investigated the mediating role that self esteem appears to play between dispositional variables and approach-avoidance motivations (e.g., Heimpel, Elliot, & Wood, 2006).

Heimpel et al. (2006) argued that self-esteem and achievement goals represent two critical functions of the self: the evaluative function and the executive function, respectively. They further point out that while these two functions are conceptually and intuitively linked, there is not much in the way of research evidence to link them empirically, as a majority of research on the mediating effects of self-esteem tends to focus more on motivation in general, rather than on specific goal constructs such as approach and avoidance goal orientation. They further state that there is strong conceptual rationale for self-esteem to serve as a link between personality dispositions and predictions of approach-avoidance goal adoption.

Self-esteem has previously been examined as a mediator of the relationship between several personality traits (such as neuroticism and extraversion) to approach and avoidance motivations. Spencer, Josepsh, and Steele (1993) proposed self-esteem as a mediator of the relationship between approach and avoidance temperaments and avoidance goals, using the rationale that one’s temperament influences his or her self-esteem, and subsequently that self-esteem influences the goals they adopt. Further, they characterized self-esteem as a resource that individuals draw upon in self-regulation.

Baumeister and Tice (1985) support this assertion. Their research found that those with lower levels of self-esteem were focused on hiding their faults and simply preventing further losses of self-esteem, which is consistent with a performance-avoidance goal orientation (Arkin, 1981; Baumeister & Tice, 1985; Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994).

Performance-avoidance goals serve the role of providing the self with “something to move away from, but not anything to move toward” (Heimpel et al, 2006, Carver & Scheirer, 1998), keeping the individual’s focus on negative potential outcomes, rather than on positive possibilities (Elliot & McGregor, 1999). Those with low self-esteem, therefore, tend to define success as a lack of a negative outcome, rather than the presence of a positive one (Heimpel et al., 2006; Elliot, Sheldon, & Church, 1997).

In contrast, those with higher self-esteem focus on presenting themselves in a positive manner, in ways in which will serve to further enhance their self-esteem (Arkin, 1981; Baumeister & Tice, 1985; Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994). Such a focus orients them toward performance-approach goals, which provide an opportunity to prove themselves as successful as compared to others.
In short, avoidance-based goal orientations are representative of a self-protective mechanism typical of those with low self-esteem, whereas approach-based goal orientations are indicative of a self-enhancement mechanism found in those with high self-esteem (Heimpel et al., 2006).

Given the theoretical and empirical evidence that narcissism is predictive of self-esteem, and given the importance role that self-esteem plays in the choice of achievement goal adoption, it seems necessary to explore the potential mediating role self-esteem may play in the relationship between narcissism and achievement goal orientation. Therefore, we hypothesize the following relationships:

**H3:** Self-esteem will mediate the relationship between overt narcissism and performance-approach goal orientation.

**H4:** Self-esteem will mediate the relationship between overt narcissism and performance-avoidance goal orientation.

**METHOD**

**Participants and Procedures**

958 alumni from a mid-sized Midwestern university completed an online survey assessing their narcissism and three types of goal orientation. Approximately 16,975 email invitations were sent out. Of these emails, 5130 were recorded as being opened, and 958 responses were received. The sample was 41.8% male and 94.7% Caucasian.

**Measures**

**Narcissism**

Narcissism was assessed using Raskin and Terry’s (1988) Narcissistic Personality Inventory. The NPI is the most widely used measure of overt narcissism. Each item requires the participant to choose between two statements based on which is more true for them. A sample item includes, Choose the statement you believe is more characteristic of you: “I am essentially a modest person/ Modesty does not become me.” The scale is then scored by adding up how many items were chosen that are representative of a narcissistic personality. Cronbach’s alpha for this scale was .85 in the current study.

**Goal Orientation**

Performance-approach and performance-avoidance goal orientation were assessing using VandeWalle’s (2001) measure and utilizing a 7-point Likert scale, with a 7 indicating “Strongly Agree”. Performance-approach goal orientation was measured with 4 items. A sample item was “I try to figure out what it takes to prove my ability to others at work.” The PGO-AP scale had a Cronbach’s alpha of .80 in this study. Performance-avoidance goal orientation was measured with 4 items, a sample item was “I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others.” The PGO-AV scale had a Cronbach’s alpha of .85 in the current study.

**Self-Esteem**

Self-esteem was assessed using Rosenberg’s (1965) Self-Esteem Scale. This measure contains 10 items and utilized a 7-point Likert scale, with a 7 indicating “Strongly Agree”. A sample item was “I feel that I am a person of worth, at least on an equal plane with others.” The self-esteem scale had a Cronbach’s alpha of .87 in the current study.

**RESULTS**

Table 1 shows the means, standard deviations, and inter-correlations between variables of interest in the current study. Narcissism yielded a significant positive relationship to performance-approach goal orientation (r=.30, p<.001), and a significant negative relationship to performance-avoidance goal orientation (r=-.12, p<.001).
Next, we examined the mediating effect of self-esteem on the relationship between narcissism and performance-approach goal orientation and on the relationship between narcissism and performance-avoidance goal orientation. As noted earlier, these analyses were conducted using the procedure introduced by Baron and Kenny (1986) to test mediation effects.

First, self-esteem was regressed on narcissism. This model (Model 1) yielded a significant positive relationship ($\beta = .21$, $p < .001$). The significant relationship between narcissism and self-esteem satisfied the first condition necessary for mediation.

Next, we sequentially examined the model with narcissism as the only predictor of performance-approach goal orientation (Model 2a), and then examined the model with self-esteem included (Model 2b). Analyses revealed the relationship between narcissism and performance-approach goal orientation was significantly positive when narcissism was included as the only predictor of performance-approach goal orientation ($\beta = .30$, $p < .001$). However, when self-esteem was then included in the analysis, the relationship between narcissism and performance-approach goal orientation increased ($\beta = .34$, $p < .001$). This pattern of results suggests that self-esteem is actually a suppressor of the relationship between narcissism and self-esteem, as opposed to a mediator. The results of these analyses are displayed in Table 2.

These analyses were then repeated by examining the model with narcissism as the only predictor of performance-avoidance goal orientation (Model 3a), and then examining the model with self-esteem included (Model 3b). Analyses revealed an initial statistically significant negative relationship between narcissism and performance-avoidance goal orientation ($\beta = -.12$, $p < .001$). When self-esteem was entered into the model, the relationship between narcissism and performance-avoidance goal orientation became non-significant ($\beta = -.05$, $p < .10$), while the effect of self-esteem was significant in the second model ($\beta = -.33$, $p < .001$). The results of these analyses indicate that self-esteem fully mediates the effect of narcissism on performance-avoidance goal orientation.

**DISCUSSION**

Is self-esteem an important part of the process through which overt narcissism relates to approach and avoidance motivation? To date, we are aware of no research that empirically explored this specific question. Research abounds that confirms the positive relationship between narcissism and approach motivation, and the negative relationship between narcissism and avoidance motivation; there are no shortage of studies on the theoretical and empirical evidence that self-esteem is positively linked to approach motivation and negatively linked to avoidance motivation. Narcissism and self-esteem overlap in important ways, yet differ in others. The current study aimed to fill the missing piece of this puzzle by clarifying whether self-esteem was a significant mediator in the narcissism and approach-avoidance motivation relationship.

Interestingly, but perhaps not surprisingly, our research revealed a complex answer to this question. Contrary to Hypothesis 3, self-esteem did not have a significant mediating effect on the relationship between narcissistic personality and performance-approach goal orientation. Consistent with prior research, the relationship between narcissism and performance-approach goals was significantly positive. The addition of self-esteem to this relationship actually increased the direct relationship between narcissism and performance-approach goal orientation, creating a slight suppression effect. This finding suggests that for narcissists, the ego-enhancing benefits and rewards of performance-approach goal orientation are appealing, and the current study shows that this is a direct relationship that does not involve the process of self-esteem. This is consistent with past suggestions that narcissists are primarily reward-driven; but adds to this understanding by ruling out the importance of self-esteem in this process.

The puzzle becomes even more interesting when we consider the differential role of self-esteem on the relationship between narcissism and performance-avoidance goal orientation. Self-esteem had a fully mediating effect on this relationship, supporting Hypothesis 4. The relationship between narcissism and avoidance motivation has historically been negative (Foster & Trimm, 2008), little has been known about the underlying process creating such a result. The current study demonstrates the importance of including
self-esteem when considering this relationship. While narcissism is positively related to self-esteem, self-esteem yields a significant negative relationship to performance-avoidance goals. The complete mediation effect found in the current study shows that the negative relationship between narcissism and performance-avoidance goal orientations can be explained fully by the role of self-esteem.

How important is self-esteem in understanding the faces and outcomes of narcissism? The current study suggests that the answer to this question is: it depends. When considering the process through which narcissists adopt approach motivations, self-esteem does not appear to be a significant consideration. Yet in understanding why narcissists are less likely to possess an avoidance motivation, self-esteem plays a vital role in clarifying this question.

Limitations

The current study had several limitations that should be acknowledged. First, the data for this study was from a single source. While we feel this is an appropriate method for measuring constructs that are tapping into such personal, internal thoughts and assessments, future research should explore whether assessing narcissism and goal orientation based on observations from close friends or significant others may yield different results.

Secondly, while the current study had a healthy sample size, all participants were alumni from a mid-sized Midwestern University, and were quite homogenous in terms of race, so it is possible these results may not generalize to a more diverse population. Also, the response rate for the survey was fairly low given the number of individuals that were sent the survey invitation, again suggesting there may be a response bias that would prevent us from easily generalizing the results to the population as a whole.

Finally, this study chose to focus specifically on overt narcissism, which could be viewed as both a strength and a limitation. Clarifying the type of narcissism being studied, and assessing the construct with a widely used and accepted measure of overt narcissism is important to clarify the dynamics associated with this complex trait. Yet narcissism is still a trait in flux, and there are many conflicting views on the way it is best conceptualized, dimensionalized, and measured. Narcissism was characterized by Kubarych et al (2004) as, “…an important human characteristic that has yet to reach an agreed psychometric structure” (p. 860). We believe capturing the dynamics between overt narcissism (arguably the most adaptive type), self-esteem, and goal orientation is an important piece of the narcissism puzzle.

Future Research

The current study revealed an interesting and complex role for self-esteem in understanding the relationship between narcissism and goal orientations. Future research should continue to investigate this role by exploring the mediating effect of self-esteem in the relationship between narcissism and mastery goal orientation, which was not investigated in this study. Would self-esteem play a critical role in whether narcissists adopt mastery learning goals? Future research should measure both covert and overt narcissism to see if self-esteem plays a differential role in how these narcissism types relate to approach and avoidance goals.

Given the rich literature on the complexity of narcissism, there is much more to explore. The current study confirmed that self-esteem has a mediating role in the overt narcissism-avoidance motivation relationship, and provided evidence that self-esteem does not mediate the relationship between overt narcissism and approach motivation.

REFERENCES


### TABLE 1

**DESCRIPTIVE STATISTICS AND INTER-CORRELATIONS OF STUDY VARIABLES**

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* N=958. All correlations are statistically significant at p<.01
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EXAMINING THE MEDIATING EFFECT OF SELF-ESTEEM ON THE NARCISSISM-PERFORMANCE APPROACH MOTIVATION RELATIONSHIP

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<td>.092**</td>
</tr>
<tr>
<td>Narcissism</td>
<td>.30**</td>
<td></td>
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</tr>
<tr>
<td>Model 2b</td>
<td></td>
<td>.124**</td>
<td>.032**</td>
</tr>
<tr>
<td>Narcissim</td>
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<td></td>
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<tr>
<td>Self-Esteem</td>
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</table>

N=958. **p<.01

### TABLE 3
EXAMINING THE MEDIATING EFFECT OF SELF-ESTEEM ON THE NARCISSISM-PERFORMANCE AVOIDANCE MOTIVATION RELATIONSHIP

<table>
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<tr>
<th>Predictor</th>
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<th>Model R-square</th>
<th>R-square change ($\Delta R^2$)</th>
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<td>.014**</td>
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</tbody>
</table>

N=958. **p<.01
Managing With Empathy: Can You Feel What I Feel?

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Empathy is the ability “to sense the other’s private world as if it were your own but never losing the ‘as if’ quality” (Rogers, 1957). We suggest that this ability has been overlooked as a potentially useful construct for management. We review the literature to provide a conceptual definition of empathy and to develop an understanding of the effect empathy might have on managerial practice. We develop a framework for the application of empathy to management, suggesting methods to develop the empathic abilities of managers in ways that will produce positive organization outcomes. Implications for researchers and practitioners are discussed.

INTRODUCTION

In a hospital, it is expected that nurses and doctors will care for their patients and be empathic to the pain the patient is experiencing. The medical field focuses on empathy training while still in medical school and during clinical education due to the nature of the work. Nurses and doctors are working with patients going through great distress and these patients want help from somebody who they perceive to have their best interests in mind and who cares about them as a person.

Care and concern for human beings should be present in any profession where people are a factor – including managing employees in a business setting. In order to effectively manage employees it is important to remember that employees are complex individuals with several factors affecting their life. Managers need to be able to relate to employees and sense what is going on in the employees’ world and the emotions employees are experiencing without getting bound up in those emotions; in other words, to empathize with employees (Rogers, 1957). A manager’s job is to put together the “big picture” view of the employee being managed, while still maintaining the objectivity and keeping everything in context. To do so, managers need to develop and display empathy in the workplace.

Perhaps one of the best examples of managing with empathy was President Abraham Lincoln. President Lincoln “possessed extraordinary empathy – the gift or curse of putting himself in the place of another, to experience what they were feeling, to understand their motives and desires” (Goodwin, 2005). Lincoln’s innate ability to detach himself from his own emotions and view situations objectively proved useful as he was able to settle conflicts within his cabinet and provide effective leadership despite cabinet
members’ contention with one another and President Lincoln. According to his close friends it was his “crowning gift” and “gave him the power to forecast with uncanny accuracy what his opponents were likely to do” (Goodwin, 2005). While not everybody is naturally empathic, empathy is a skill that can be learned and provide managers an important foundation for connecting to employees.

Empathy is the spark of human concern for others, the glue that makes social life possible (Hoffman, 2000). It can be argued that the basis for all human interaction is empathy – the ability to understand what the other person is experiencing. To date, however, there has been relatively little writing, theoretical development, or empirical research on empathy as a managerial construct. While there is material available on empathy in domains such as health care (e.g., Irving & Dickson, 2004; Northouse & Northouse, 1992), human services (Hojat, 2009) and counseling (Clark, 2010; Greason & Cashwell, 2009; Trusty, Ng, & Watts, 2005), there is a paucity of substantive work integrating the issue of empathy in the practice of management.

Our purpose in this paper is to examine the construct of empathy within the managerial sphere of activity. We first examine the construct of empathy and the current research on the effects of empathy in organizational and interpersonal relationships. We suggest that the ability to empathize is something that is a central part of effective management when it comes to dealing with, retaining and developing employees. For this reason, empathy training should be incorporated into management development.

WHAT IS EMPATHY?

Empathy is often a misconstrued and misunderstood construct (Book, 1988), frequently mistaken for similar constructs such as sympathy, kindness, or approval. While empathy has often been thought of as “feeling what the other person is feeling,” current research suggests that this is but one aspect of the empathy construct. Rogers’ (1957) early definition of empathy is the ability “to sense the other’s private world as if it were your own but never losing the ‘as if’ quality” (p. 210). In this regard, empathy is seen as a complex intrapsychic and interpersonal process (Bennett, 1995).

Hojat (2009) defined empathy as “a predominantly cognitive (rather than emotional) attribute that involves an understanding (rather than feeling) of experiences, concerns, and perspectives of [another person], combined with the capacity to communicate this understanding” (p. 413). Empathy is an awareness of all things outside of the self and the ability to predict outcomes based on that awareness. Empathy is a complex variable and may be seen as an ability, communication style, trait, response, skill, process, or experience (Wheeler & Barrett, 1994). The common thread is that empathy is both cognition and action. While awareness and understanding are part of empathizing, there is also an active interpersonal relationship that is implied, as in the often-heard empathy mantra “to put yourself in someone else’s shoes”.

Indeed, later work by Rogers (1975) and Nelson-Jones (1983) further refined the definition of empathy. In the revised definition, empathy has cognitive, affective, and behavioral components. The cognitive component focuses on understanding the other person’s world; the affective component concerns feeling what the other person is feeling; and the behavioral component is the ability to communicate this understanding and feeling to the other person.

A review of the empathy literature by Gladstein (1983) notes that different researchers and theorists tend to emphasize different aspects of this revised definition of empathy. Gladstein (1983) emphasized the cognitive aspect of empathy, defined as intellectually taking the role or perspective of another person, and differentiated this from the affective dimension of empathy, defined as responding with the same emotion to another person’s emotion. Research appears to suggest that many prefer to utilize two distinct dimensions of empathy (Irving & Dickson, 2004). However, later work explicitly incorporated the behavioral component of empathy as essential for effective relationships, particularly through the application of communication skills (Egan, 1998; Hackney, 1978; Ivey & Authier, 1978).

Empathy has also been defined in terms of three constructs – empathetic responsiveness, perspective taking and sympathetic responsiveness (Weaver & Kirtley, 1995). Empathetic responsiveness occurs when one person experiences an emotional response parallel to another person’s actual or anticipated
display of emotions. Perspective taking is the most widely agreed upon empathy construct and is simply a process that broadly involves imagining oneself in the place of another. Sympathetic responsiveness comprises feelings of sorrow, compassion, or concern for others, resulting from consideration of their plight.

What is apparent from these conceptual definitions is that empathy has both a cognitive/affective (intrapsychic) component and a behavioral (interpersonal) component (Rogers, 1957). It is the ability to both understand and feel what the other person is feeling and to communicate an empathic response that might be useful for managers in organizations. A manager who can comprehend the feelings and emotions of subordinates, and can communicate that understanding to the subordinate, may be more effective in providing direction and motivation to employees.

While some have suggested that empathy is a component of emotional intelligence (e.g., Salovey et al., 2001; Goleman, 1995; Law et al., 2004; Mayer et al, 1999), it is apparent from this review that empathy is a distinct construct. Emotional intelligence focuses almost exclusively on perceiving, using, understanding, and managing individuals’ emotions and feelings (Salovey et. al., 2001; Goleman, 1995). However, empathy involves more than individuals’ emotions; empathy includes the cognitive understanding of the individuals’ situation as well as the emotions that are present (Gladstein, 1983; Rogers, 1975).

RESEARCH ON EMPATHY

Psychological studies have shown that humans start developing empathy during their formative years. Hoffman (2000) has proposed a theoretical framework for the development of empathy with a focus on empathic distress – empathy’s contribution to the principles of caring and justice. There are five stages of development that humans experience: reactive newborn cry, where babies cry when others cry; egocentric empathic distress, when children respond to another’s distress as though they are the ones in distress, suggesting a lack of clear distinction between self and others; quasi-egocentric empathic distress, when children realize the distress is the other person’s and not their own, but confuse what the other is feeling with their own feelings and try to help by doing for the other what they would want for comfort themselves; veridical empathic distress, in which children come closer to feeling what the other is actually feeling because they now realize that the other has inner states that are independent from their own; and empathy for another’s experience beyond the immediate situation, where children realize that others have lives that can generally be sad or happy, and a subcategory of this stage when children can empathize with an entire group. Research has supported various aspects of this model (e.g., Hoffman, 2000; Hoffman, 1981; Sagi & Hoffman, 1976).

By adulthood people have generally developed the cognitive ability to determine the correct and appropriate action (Hoffman, 1981). Thus the research suggests that empathy is a natural tendency for humans that can be developed into an ability to respond appropriately to many different situations. Additional research supports this view of empathy as a developmental process (e.g., Bowman & Reeves, 1987; Ford, 1979; Piaget, 1965; Selman, 1980), including research that identifies the underlying neuropsychological basis for empathy (Grattan, Bloomer, Archambault, & Eslonger, 1994).

Research has demonstrated that empathy can be measured. Robert Hogan (1969) developed the Hogan Empathy Scale (HES) to measure the skill level a person had in regards to empathy and selected five universal behaviors that characterize empathic people, that are also important qualities to possess in order to be an effective manager: being socially perceptive of a wide range of personal cues; being aware of the impression made on others; being skilled in social techniques of imaginative play, pretending, and humor; having insight into one’s own motives and behavior; and possessing the ability to evaluate the motivation of others in interpreting situations. Being socially perceptive of a wide range of personal cues, as well as the ability to evaluate the motivation of others in interpreting situations, is an important management skill because managers need to be fully aware of all facets of a situation and any perceptions and motivations involved, so the manager can make the best possible decision or provide appropriate feedback.
Additional research measuring empathy has identified four measurable dimensions of empathy: Perspective Taking, Empathetic Concern, Empathetic Matching, and Personal Distress – taken together they comprise the Multidimensional Empathy Scale (MES) (Skinner & Spurgeon, 2005). This scale was shown to have good psychometric properties, with good internal reliability and construct validity. Others have developed similar scales using other instruments and questionnaire items (Aggarwal, Castleberry, Ridnour, & Shepherd, 2005; Davis, 1980, 1996; Mahsud, Yukl, & Prussia, 2010; Marandi, Little, & Sekhon, 2006; Mehrabian & Epstein, 1972). We therefore conclude that empathy can be a useful construct in the organizational sciences.

Indeed, extant research indicates that empathy among leaders in organization can affect leader-member exchange quality (Mahsud, Yukl, & Prussia, 2010) and such organizational outcomes as job satisfaction and organizational commitment (Skinner & Spurgeon, 2005). This has led some to suggest that empathy may be essential for effective organizational leadership (Stefano & Wasylyshyn, 2005). Empathy has also been shown to influence ethical decision-making in managers (Mend & May, 2009). Additional empirical work has shown empathy to affect customer loyalty (Marandi, Little, & Sekhon, 2006), relationship outcomes in the sales function (Aggarwal et al., 2005), and positive patient outcomes in health and human service organizations (Hojat, 2009). These findings suggest that there are broader organizational outcomes that can be positively influenced by the development of empathy among members of the organization, further supporting our contention that empathy is an important construct for the practice of management.

**EMPATHY IN MANAGEMENT**

In management, perspective taking is the construct of empathy that may be the most relevant. Managers should be able to view a situation in terms of how employees might be viewing the situation, but without getting so emotionally invested in the outcome that managers lose their objectivity. Objectivity is key as it applies to management and empathy. In order to effectively manage it is necessary to look at everything equitably – not necessarily all equal but giving each situation the time and consideration deserved. Empathy in management is not necessarily feelings-based. It is about viewing a situation from an angle different than what is usual or natural for the manager. An empathic manager should be stressing perception and cognition in defining their level of empathy with “objectivity, detachment and analytic knowledge of the other person’s social roles as its critical dimensions” (Keefe, 1976: 10).

Managers need to critically analyze the factors influencing the employee’s reaction without getting too emotionally invested in what the employee is experiencing or losing sight of the big picture and impeding the managers’ own well being. President Lincoln’s great inclination for empathy also came with a downfall as he could go through great periods of depression from the very real feeling of pain he could experience when empathizing with others (Goodwin, 2005). While empathy may be a valuable personal strength and asset to possess as a manager, it is important to balance empathy with the requirement to produce organizational results and the manager’s own well-being. (It has been noted by Black and Weinrich (2003) that empathy is a major component in compassion fatigue or burnout among those in the helping professions, and there is therefore the possibility that the same issues might affect a highly empathic manager.)

For a manager to be a proficient empathizer, he or she must be able to take the role of another accurately, and be able to correctly predict the impact that various lines of action will have on the other’s definition of the situation (Jessor & Richardson, 1968). Management training is very focused on “big picture” thinking and seeing how all parts of a corporation can fit together. This concept can sometimes lead to managers viewing employees as just another “piece” to fit into the “puzzle,” and forgetting to focus on the individual employee as a “puzzle” of his or her own. From a decision-making and implementation standpoint, it is important to be able to anticipate employee reactions. Without having an established rapport with employees, it is difficult to determine how a new idea will be received. Empathy can help establish an initial relationship with the employee and give a better understanding of what the
employee is like, as well as his/her general reactions, emotions and how s/he learns and processes information. This is especially important in management because people who are shown care and empathy will work more effectively for the people who show them care. Caring about others does not mean getting “soft” as a manager, rather it means showing reasonable concern and support for employees in every way possible to help them perform and grow (Lombardo & Eichinger, 1996).

Empathy breeds affiliation within a company. A manager’s empathic behavior stimulates employees’ need for affiliation by generating trust in and identification with the manager, stimulating emotional attachment with the manager and emphasizing cooperative relationships among the followers (Choi, 2006). People have a natural need to form personal relationships with others and when this can be accomplished at work it helps to generate trust and lead the employee to desire to prolong their relationship with the company. Trusting relationships are important when it comes to employee retention. Employees with this high need for affiliation that is enhanced by their manager perceive a very strong collective identity and show organizational citizenship behavior towards the manager and co-workers. These behaviors help build a highly cohesive and effective team (Choi, 2006). Empathic managers help to create identification and strong bonds with employees that help to define the boundary of the group and put strong emphasis on team spirit. Group identification helps to establish cohesiveness and increase the degree of loyalty to the group and intention to remain with that group (Lott & Lott, 1965). In this cohesive type of environment, empathic behaviors also tend to filter down because if managers at one echelon demonstrate a particular leadership style, similar qualities are likely to be seen at lower echelons (Waldman & Yammarino, 1999).

An important aspect of the manager’s job is to develop talent and put employees in a better situation to succeed. Effective managers know more about employees than just the work they do, including the employees’ current situation, dreams, preferences, and wishes so that long-term, managers can give critical feedback to help employees grow and achieve (Lombardo & Eichinger, 1996). Coaching employees is beneficial to the managers because managing the whole person will often be rewarded with better performance and a better feeling for the manager (Lombardo & Eichinger, 1996).

Empathy can also be characterized as being skilled in the social techniques of imaginative play, pretending, and humor (Hogan, 1969). Getting employee support for new ideas and decisions is much easier for an empathic and well-liked manager than for a manager who sits behind a closed door all day. One of the best ways for the manager to be endearing is by telling humanizing anecdotes and stories. For example, President Lincoln was well known for being an animated storyteller and could captivate audiences of all sizes; whenever he heard a new story he would practice how he wanted to tell it in a way to best entertain his crowd (Goodwin, 2005).

While storytelling in management should not be overused, it is a good management practice to regularly have one-on-one conversations with employees where personal sharing is encouraged. Caring is knowing and getting to know at least three non-work things about everyone such as hobbies, interests, or family details is beneficial so there is something to talk about besides just the work performed; this can make employees feel valued as individuals. (Lombardo & Eichinger, 2004)

Managers need to be aware of their own motives and be aware of the impression they are making. Many attempts at empathy fail due to a lack of awareness of the image actually being portrayed. One of the least empathic behaviors, as determined by Hogan’s (1969) research in developing the HES, is not varying roles and relating to everybody in the same way. Managers can fall into the trap of having their own “unique management style.” How they behave is “just the way they are.” However, every employee is an individual and needs to be treated as such. Each employee will react and handle certain situations and events in a different way. By not varying management styles between employees, the manager is doing a disservice to all involved and not being effective in the management role.

Being able to perform tasks and meet goals does not necessarily mean the manager is operating as effectively or empathically as possible. Inherent in the title of manager is directing or controlling others in the tasks of the organization. Dealing with the “others” – the employees – is the unpredictable variable when setting goals and determining effectiveness. When it comes time for strategic planning and goal-setting the empathic manager who has taken the time to get to know the employees on a personal level,
determine employees’ potential, and understand employees’ motivations, may have a real competitive advantage in setting and achieving goals.

**Empathy Helps Managers Grow**

Managers need to hone personal strengths regarding empathy in the workplace, particularly when working on developing interpersonal competence, the ability to understand others’ circumstances. There are four main aspects to interpersonal competence that correlate to aspects inherent to empathy and development (Jeffcoat, 2012). The first is self-awareness. Managers who are resilient have a high level of interpersonal competence and awareness of internal emotional states/situations and how it impacts interactions. The second aspect is self-management or self-control, which is the ability to handle feelings well and not let the feelings control the situation. This speaks to the objectivity that managers need to possess, whether over employees’ emotions or the manager’s own emotions. Interpersonal competence and self-control focus on the “self” aspect of empathy and interpersonal competence because empathy needs to start from within. However, empathy is an action to be taken, not a feeling, so it is important to remember the implementation component and the willingness to empathize in concrete, specific ways (Shapiro, 2002).

The two other main concepts of interpersonal competence focus on action-based ideas (Jeffcoat, 2012). Social awareness is the ability to see another person’s perspective as well as tune into unspoken signals, being able to fit the puzzle pieces together into the big picture. Social awareness also encompasses being aware of the current socioeconomic, physiological, psychological, and other environmental states in which the employee, organization or even world exist. The final concept, relationship management, encompasses all of the other aspects and includes reading the emotional needs of others and taking steps to meet those needs. Developing manager-employee relationships is important not only because it makes it easier to get employee buy-in and compliance with management decisions, but it also makes the manager’s job more rewarding by developing these fulfilling relationships at work. (Shapiro, 2002) The aspect of relationship building helps managers use empathy to understand the behaviors and thought processes of employees, allowing the focus to be on what the employee is going through, rather than what the manager is experiencing. Relationship management is important in developing personal resilience in management due to the ability to detach from the situation without seeming indifferent.

Empathy starts with taking care of the self including focusing on how personal experiences relate to the current situation to make it easier to sort out real feelings from those perceived by taking the others’ perspective. Interpersonal competence, the ability to understand and empathize with others’ circumstances, stems from a high level of emotional intelligence. Emotional intelligence is the ability to manage emotions in a way that does not negatively impact others. Having a high emotional intelligence can lead to a high level of social awareness which can be helpful in effectively managing relationships with others (Jeffcoat, 2012). In the empathic relationship developed between managers and employees, an environment can emerge that is conducive to a free flow of ideas without judgment, benefitting all involved. Good ideas come from every level of an organization; therefore taking the time to listen to employees might be very profitable for the organization. Task-oriented managers are often characterized as serious and using a one-way communication style while emotional managers are described as friendly and use two-way communication that emphasizes emotions to influence employee motivation. (Skinner & Spurgeon, 2005). Managers require a balance between these factors in order to be effective in the role of leading tasks and managing employees. Empathy creates this balance.

Managers taking the time to empathically coach and mentor employees throughout their careers also reap benefits from this action. There is a great sense of accomplishment and pride that comes from helping employees achieve goals and recognition from others that a manager may have had a role in an employee’s success (Johnston, 2012). Mentorship relationships are often two-way streets and can teach the manager as much about his or her position and what s/he wants from life, as it can for the employee in the protégée position.
Empathy Training in Action – What Next?

Studies reviewed in the medical fields indicate that empathy is a skill that can be taught. Empathy scores increased after training modules were given, with overall empathy scores maintaining over time (Wheeler & Barrett, 1994). When the medical fields teach students to be empathic towards patients, generally two approaches to teaching empathy emerge: behavioral (skills-based) and attitudinal. A significant amount of formal training focuses on teaching empathy as a behavioral skill and defines empathy as a set of discrete behaviors that can be analyzed and learned (Shapiro, 2002). Behaviorists focus on breaking empathy down into a series of verbal and behavioral steps which trainees visualize doing first, and then implement. Others who adhere to a more attitudinal approach feel that focusing on techniques can make empathy seem forced and insincere. Attitudinal trainers feel it is imperative that learners develop a personal empathic style and find unique words rather than use specific phrases and techniques (Shapiro, 2002).

These techniques used to training individuals in empathy can be applied in the business world. Managers that are naturally prone to empathy will take the more attitudinal approach. These managers will benefit from personal empathy style assessment complete with methods to apply that to the overall managerial style being used. Managers without a natural inclination to be empathic will need help identifying and applying empathic behaviors.

From this review of the literature on empathy in management, it is possible to derive a definition of empathy as applied to the managerial role. We suggest that, as applied to management, empathy is the ability to see and understand all aspects of an employee and situation without losing sight of self or the objectivity required to do what is expected and what is best for all involved. It is important to convey empathic attitudes when interacting with employees. Some of these attitudes include patience, respect, being fully present and engaged, connecting on a human level, being nonjudgmental and taking seriously what the employee is saying (Shapiro, 2002).

Several skills can be developed to convey empathic behaviors that fall into three main categories – verbal, reflective listening, and nonverbal. All of these can complement each other and, when used correctly together, convey great empathy to the employee. It is important, first and foremost, to listen without interrupting (CUNA, 2009). Action oriented managers are apt to cut people off midsentence instead of listening (Lombardo & Eichinger, 1996). This can inadvertently send a message to the employee that “what I have to say is more important than what you have to say.” Another disadvantageous activity to creating an empathic environment is making too quick of an interpretation of what the other person is saying. Empathic managers take the time to listen without initially judging to get the full picture before jumping to conclusions. Managers also need to be sure to use appropriate language when giving feedback. The manager should consider the situation and the employee before speaking to avoid saying something damaging to the situation or something that offends or alienates the employee.

Reflective listening is characterized by clarifying what is being said by either paraphrasing or acknowledging. When paraphrasing to an employee, a manager should state the feeling the employee is experiencing and the reason for this experience to ensure correct interpretation (CUNA, 2009). The manager should also acknowledge to the employee an understanding of the employee’s frame of reference to help generate trust, and be aware of the messages nonverbal cues can be sending. The manager should use appropriate nonverbal communication to demonstrate empathy, such as maintaining eye contact in a non-threatening way and using a steady tone of voice when addressing the employee. Many natural empathizers mirror the body language of the person with whom they are conversing. Managers who utilize this skill with employees help to show a strong connection and create the inner cues that contribute to understanding and experiencing what the employee is going through (Hoffman, 1981). Keeping facial expressions as neutral as possible is also important to convey empathy. To be empathic, managers need to be concerned with the organizational context and that includes the components of the messages and how the messages are delivered and received.
Practice Makes Perfect

For the novice empathizing manager, this influx of behavior and skill information can seem overwhelming at first. A general empathy training module that encompasses the information presented above is important for exhibiting the importance of empathy in management and the skills that need to be developed. But, there is no “empathy switch” to flip and instantly be viewed as a more empathic manager simply from participation in training and knowledge of empathy as a managerial construct. For managers who are not naturally inclined to be empathic, this will take time and work but the long-term benefits for the manager as well as the organization may far outweigh any negatives from the time and effort spent. Setting smaller goals such as inputting employees’ birthdays into a calendar and sending out birthday messages, or writing down one non-work related fact about every employee and starting up a conversation about that fact might go a long way towards developing empathy skills.

CONCLUSION

From this review of the literature and research, we contend that empathy as a managerial construct has been largely overlooked by researchers and practitioners. Despite the many potential benefits of empathic behavior, developing empathy among managers has not been an emphasis of organizations. Management has tended to focus on issues of effectiveness and efficiency, trying to generate increased results from fewer resources. While this is the essence of managerial practice, the fact that results are to be generated through people separate the practice of management from other organizational activities. Developing a genuine understanding of the employees being managed is an essential element in effective managerial practice.

There is a significant need for empirical research to understand the development of empathy in managers and the relationship between empathy and desired organization results. While empathy has long been accepted as an important element of health care practice, there has been little to explore the influence of managerial empathy on organization health. Empathy has been shown to be a measurable construct; research relating empathy to other measurable organization outcomes is sorely needed.

For practitioners, existing knowledge on empathy and the development of empathic behaviors should be applied through training and developmental programs to enhance empathy among managers. The ability to “get into the other’s world” may be an important skill for managers to develop. The tendency of practitioners has been to treat employees’ emotions and feelings as variables to be manipulated through managerial practices such as reward systems, motivational schemes, communications, etc., for the purpose of achieving desired outcomes. Empathy suggests that understanding others simply for the sake of understanding, may accrue benefits to the organization beyond those driven by existing practice. Indeed, as more and more organizations find that value is found in the knowledge of employees, increasing managerial empathy may be useful to support and enhance knowledge-based work.

In summary, we believe that the concept of empathy may hold great promise for enhancing managerial effectiveness. Empathy has already been found to generate positive outcomes in counseling, human services, and health care. It appears that by properly incorporating empathy into managerial practice, additional organizational outcomes can be enhanced. Employee retention, satisfaction, commitment, and motivation are a few of the outcomes that may be influenced by managerial empathy. By enhancing managers’ understanding of employees, empathy can aid in developing relationships that can create positive results for organizations. Managers should be aware that empathy is an action to be taken for the welfare of the employees, the managers, and the welfare of the organization as a whole.

REFERENCES


The Influence of Individual Values on Work-Family Conflict: 
The Roles of Materialism and Postmaterialism

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The question of how one’s values influence work-family conflict is a recent area of inquiry. This study had two aims: to explore whether the values of materialism and postmaterialism were associated with work-family conflict; and to assess the relationship between the two values themselves. A total of 217 working adults were surveyed regarding their values and perceived role conflict. Materialism was positively associated with both directions of work-family conflict, but no relationship was seen with postmaterialism. The interaction between materialism and postmaterialism was not significant. The findings demonstrate the importance of considering values in the context of work-family conflict.

INTRODUCTION

Researchers have considered the issue of work-family conflict (WFC) for several decades, yet the pace of scholarly inquiry continues to intensify (Ford, Heinen, & Langkamer, 2007). The ongoing interest in work-family conflict reflects the fact that it has important consequences for both workers and employers. Individuals who experience high levels of work-family conflict suffer from psychiatric disorders (Frone, 2000), impaired marital interactions (Hughes & Galinsky, 1994), and lower life satisfaction (Adams, King, & King, 1996). From an employer’s perspective, work-family conflict is associated with reduced organizational commitment and increased intentions to turnover (Allen, Herst, Bruck, & Sutton, 2000). Further, society itself is affected by work-family conflict due to resulting job stress (Gambles, Lewis, & Rapoport, 2006). Because of the range of deleterious outcomes, it is important to better understand the factors that lead to work-family conflict. The influence of values on role conflict is an area that may provide needed insights.

Many variables have been linked to work-family conflict, such as work time commitment (Kinnunen & Mauno, 1998), family demands (Parasuraman, Purohit, Godshalk, & Beutell, 1996), organizational culture (Thompson, Beauvais, & Lyness, 1999), personality (Baltes, Zhdanova, & Clark, 2011), and gender (Martinengo, Jacob, & Hill, 2010). Overall, dispositional factors such as personality are more strongly associated with WFC than situational factors like job autonomy (Andreassi & Thompson, 2007). The realm of personal values, however, has received less attention as a potential source of conflict. Yet values are truly part of “what the person brings to the table” for work-family conflict (Andreassi, 2011, p. 1474). Moreover, the values people hold in life are an integral part of how individuals define themselves and set goals (Locke & Henne, 1986). Logically, therefore, values will influence the choices that people make concerning work, family, and other pursuits.

Two personal values that may be especially helpful in predicting work-family conflict are materialism and postmaterialism since they have been connected to a wide array of behaviors, both in the workplace...
Materialism, defined as placing high importance on income and material possessions (Diener & Seligman, 2004), leads people to focus on attaining material rewards at the expense of personal relationships (Kasser, 2002). Meanwhile, postmaterialism, which emphasizes self-expression and affiliation, is related to such concerns as environmentalism (Lee & Kidd, 1997) and quality of life (Uhlane & Thurik, 2003).

The influence of materialism and postmaterialism on the work-family interface is largely untested. Thus, one goal of this study was to assess the relationship between these two values and work-family conflict. A second goal was to explore whether the interaction between materialism and postmaterialism is significant in relation to work-family conflict. This second goal reflects disagreements concerning the dimensionality of the materialism-postmaterialism relationship; in response, the study includes two conceptualizations – one bidimensional (Bean & Papadakis, 1994) and the other interactional (Giacalone & Jurkiewicz, 2004).

VALUES AS ANTECEDENTS OF WORK-FAMILY CONFLICT

According to a meta-analysis by Byron (2005), sources of work-family conflict can be: (1) variables in the work domain (such as work hours), (2) variables in the non-work domain (such as spousal employment), and (3) demographic/individual factors like income and gender. Some variables, such as social support, cut across multiple categories since one can receive support at work and at home. Researchers have also explored whether individual difference variables are associated with work-family conflict (Gutek, Searle, & Klepa, 1991), including Big Five personality traits (Wayne, Musisca, & Fleeson, 2004), workaholism (Buelens & Poelmans, 2004), and core self-evaluations (Friede & Ryan, 2005). Yet, with a handful of exceptions, values have been little considered in regards to work-family conflict. And even when WFC studies have included values, researchers have not necessarily considered them as direct antecedents of conflict (e.g., Carlson & Kacmar, 2000).

Values are “trans-situational goals, varying in importance, that serve as guiding principles in the life of a person” (Latham & Pinder, 2005: 491). Values help shape career and family choices (Verplanken & Holland, 2002) as well as a host of other activities in life. Since one’s values help to define one’s goals, it is possible that values create pressures in one part of life (e.g., work) that make it hard to fulfill tasks in the other domain (e.g., family). Several studies have included values in the context of work-family conflict. For example, Carlson and Kacmar (2000) found that life role values moderated perceived work-family conflict. Specifically, for individuals who highly valued their family roles, work antecedents produced greater conflict; for those who highly valued work, family antecedents produced more conflict. Cinamon and Rich (2002) compared work-family conflict among three “profiles” of respondents based on their stated importance of work versus family. As predicted, individuals who placed greater importance on family reported lower levels of work-to-family conflict. Carr, Boyar and Gregory (2008) confirmed role centrality as a moderator of work-family conflict and discovered that for employees who placed greater importance on family over work, conflict was associated with higher job turnover and poorer work attitudes. Lastly, Bagger, Li, and Gutek (2008, p. 200) found that “increases in FIW were related to more job distress and less job satisfaction, but only for those who were low in family identity salience.” These results suggest that the value one places on family may have an effect on work-related outcomes.

Although the above studies support the importance of including personal values in studies of work-family conflict, there remains much to explore. One issue is that (as noted), often values are not conceived as antecedents of WFC, yet evidence indicates that they should be (Promislo, Deckop, Giacalone, & Jurkiewicz, 2010). Other life values may have stronger connections to work-family conflict, particularly if they are: (1) predictive of people’s behavior in both their work and family domains; and (2) possess theoretical connections to the work-family interface. The values of materialism and postmaterialism satisfy these criteria because they reflect the inherent role conflict between work and home, in which “…participation in the work (family) role is made more difficult by virtue of participation in the family (work) role” (Greenhaus & Beutell, 1985, p. 77). This is the case because work typically provides material rewards, while family serves to enhance one’s quality of life (Kasser, 2002).
Materialism and Work-Family Conflict

Materialism reflects two central beliefs: that acquiring possessions will lead to happiness, and that one’s possessions define success (Richins & Dawson, 1992). Notably, individuals who are highly materialistic place less importance on interpersonal relationships, and seek to boost their appearance to others (Kasser, 2002). Materialistic people thus tend to devote considerable time and energy to work (Sheldon & Kasser, 2001). Materialistic values have consistently been associated with a plethora of negative states of well-being, including depression and anxiety (Kasser, 2002), and lower life satisfaction (Sheldon & Kasser, 2001). Recently, materialism was also connected to negative well-being at work, specifically to lower job and career satisfaction (Deckop, Jurkiewicz, & Gialalone, 2010).

Since materialists actively seek money and possessions, they will tend to focus more on work (although, as the above study found, they are actually less satisfied at work). These efforts will diminish time and energy available to their families (Kasser, 2002). The result will likely be increased role conflict. In fact, a recent study found that materialism was strongly associated with work-family conflict (role overload mediated the relationship) (Promislo et al., 2010).

Postmaterialism and Work-Family Conflict

Postmaterialism “describes the degree to which a society places immaterial life-goals such as personal development and self-esteem above material security” (Uhlner & Thurik, 2003, p. 2). Inglehart (2008) argues that a gradual but profound value shift has occurred in advanced industrial nations. As countries achieve higher levels of economic security, their populations become more postmaterialistic; that is, they place greater value on such goals as free speech and self-expression, and less value on material concerns.

Inglehart’s research is founded on two hypotheses: (1) a scarcity hypothesis, which states that “one places the greatest subjective value on those things that are in relatively short supply” (Inglehart, 2000, p. 220). (2) a socialization hypothesis – values are formed in one’s pre-adult years, and typically change little thereafter. Thus, a nation’s values as a whole are slow to change (Inglehart, 2000). Although hugely influential, Inglehart’s work has been attacked on a number of fronts. One major criticism is that his unidimensional construct of materialism-postmaterialism is flawed (Bean & Papadakis, 1994; Kidd & Lee, 1997).

Although postmaterialism has generally been studied on a macro level, some findings provide insight into its possible connection to work-family conflict. For example, a study of Spanish students found that postmaterialism was associated with “postmaterialist leisure” (Aguila, Sicilia-Camacho, Rojas Tejada, Delgado-Noguera, & Gard, 2008). These activities consisted of reading books, artistic endeavors, and attending political meetings. Materialistic students, on the other hand, primarily engaged in “materialist leisure” which was short-term and competitive. Further, Lewis (2003) argued that postmaterialists tend to integrate work with other parts of their lives, an approach that can help in attaining role balance (Kossek & Lambert, 2005). In sum, postmaterialists are less concerned with material rewards and may devote more attention to family, community, and leisure activities that help promote self-growth and benefit other people.

Thus, research on materialism and postmaterialism has produced intriguing implications for the work-family interface. Materialistic values have been associated with deficits in well-being (Deckop et al., 2010; Kasser, 2002) as well as with work-family conflict (Promislo et al., 2010). On the other hand, postmaterialist values may serve to enhance one’s ability to find balance between work and family.

STUDY HYPOTHESES

Because of the concerns noted with Inglehart’s unidimensional construct of postmaterialism, this study used bidimensional (Bean & Papadakis, 1994) and interactional models (Giacalone & Jurkiewicz, 2004) to assess work-family conflict. For the bidimensional model (assessing the relationship of each value to work-family conflict separately), materialism is expected to be associated with both family interference with work (FIW) and with work interference with family (WIF). First, materialists will tend
to view family as interfering with work because family demands can hinder the attainment of material rewards (for example, if a planned vacation conflicts with a lucrative work assignment).

*Hypothesis 1a: Materialism will be positively related to FIW.*

Regarding WIF, even though materialists may not necessarily place high value on their family role, they will likely recognize that their work is taking away from family time. Also, they will still experience demands (and possibly frustrations) from other family members.

*Hypothesis 1b: Materialism will be positively related to WIF.*

Postmaterialism is expected to have a negative relationship with both FIW and WIF. Postmaterialists will perceive less FIW because, even though they invest time into family, these efforts will not be seen as “interfering” with work. On the contrary, family time is valued since it contributes to one’s overall quality of life.

*Hypothesis 2a: Postmaterialism will be negatively related to FIW.*

Individuals high in postmaterialism will experience lower WIF due to two factors: (1) they place less value on material rewards and thus will spend less time and effort on work; this leaves them with more time to devote to family; (2) postmaterialists appear to value role balance (Inglehart, 2000; Marks & MacDermid, 1996) and thus are more likely to give equal weight to work and family.

*Hypothesis 2b: Postmaterialism will be negatively related to WIF.*

Lastly, it is important to consider that materialism and postmaterialism may not be independent values. If this is the case, the two values may interact to influence role conflict. For example, Giacalone and Jurkiewicz (2004) found that the interaction of postmaterialism and materialism explained significant variance in predicting dimensions of personal and social identity (DPSI). Specifically, postmaterialism was only significant when levels of materialism were low. Because data on this question is limited and mixed (Giacalone, Jurkiewicz, & Deckop, 2008), the following are posed as research questions:

*Research Question 3a: Will materialism moderate the relationship between postmaterialism and FIW, such that increases in postmaterialism will be associated with lower levels of FIW only when materialism is low?*
*Research Question 3b: Will materialism moderate the relationship between postmaterialism and WIF, such that increases in postmaterialism will be associated with lower levels of WIF only when materialism is low?*

**RESEARCH DESIGN AND METHODOLOGY**

**Sample and Procedure**

Respondents in this study were adults in the U.S. who were working full-time (71%) or part-time (29%). Respondents were obtained through a panel called “ZoomPanel” maintained by Zoomerang/MarketTools (now owned by SurveyMonkey), an online survey company that provides individuals who meet specified criteria and have indicated a willingness to complete surveys for research purposes (MarketTools Inc., 2009). Besides actively working, the other criterion for respondents was that they were either: (1) married/living with a partner, (2) had children, or (3) were both married/living with a partner and had children. This ensured that respondents had an adequate level of family responsibility (Kossek & Ozeki, 1998).
Data were collected in two waves with the same set of respondents; the surveys were separated in time by six weeks. Wave 1 included measures on materialism, postmaterialism, social desirability, and demographic variables. Wave 2 included the measures of work-family conflict. A total of 217 respondents completed both waves of the survey, comprised of 55% male and 45% female. Respondents represented a wide range of ages: 25% were between 18 and 35, 23% between 36-45, 26% between 46-55, and 15% over 55. About two-thirds of respondents were married or living with a partner, one-quarter were single, and 11% divorced or widowed. About half the respondents had children living at home.

The mean number of hours worked per week was 37, while the average household income was in the range of $60,000 - $79,999. A comparison of the study sample to MarketTools’ statistics on its ZoomPanel showed that the sample was a good representation (MarketTools Inc., 2009).

**Measures**

*Materialism-Postmaterialism*

Materialism was measured with Richins’s (2004) Material Values Scale (the revised 15-item scale). A sample item is: “The things I own say a lot about how well I’m doing in life.” Postmaterialism was measured with Giacalone and Jurkiewicz’s (2004) Revised Materialist–Postmaterialist Index. This scale consists of 11 items that emphasize personal growth and caring for others. A sample item is “Caring and compassion are essential to a business setting.” For both scales, respondents rated each statement from 1 (strongly disagree) to 5 (strongly agree).

*Family Interference with Work and Work Interference with Family*

FIW and WIF were measured with an 18-item scale by Carlson, Kacmar, and Williams (2000) that assesses the extent to which an employee’s work interferes with family responsibilities (WIF), and the extent to which family interferes with work (FIW). A sample WIF item is “When I get home from work I am often too frazzled to participate in family activities/ responsibilities.” A sample FIW item is “I have to miss work activities due to the amount of time I must spend on family responsibilities.” Responses ranged from 1 (strongly disagree) to 5 (strongly agree).

*Control Variables*

Recognizing that stated values may be influenced by perceived desirable responses, the study controlled for social desirability using a short version (Fischer & Fick, 1993) of the original scale. Respondents selected either “True” or “False” for this scale; a sample item is “I am always courteous, even to people who are disagreeable” (a response of “true” indicates a high level of social desirability). Also, it was important to control for other variables that may be correlated with the independent and dependent variables, such that their exclusion may result in biased results. These additional control variables were: age, gender, marital status, number of children living at home, age of youngest child at home, work status, household income, number of hours worked per week, current position level, job sector, and education level. Age is related to postmaterialistic values according to Inglehart’s (1990) theory of generational replacement. Meanwhile, family demands can vary due to marital status, number of children at home, and age of the youngest child at home (Rothbard, Phillips, & Dumas, 2005). Moreover, one’s income may affect postmaterialism, as such goals become more important after basic needs are satisfied (Inglehart, 1990). Lastly, work status, hours worked per week, and position level likely affect one’s level of work demands (van Rijswijk, Bekker, Rutte, & Croon, 2004).

**RESULTS**

A correlation analysis showed that materialism was significantly correlated with both forms of work-family conflict (.31 for FIW and .33 for WIF). However, postmaterialism was not significantly correlated with either form of work-family conflict. Lastly, the correlation between FIW and WIF was quite high (.63), a finding often seen in previous research (Byron, 2005). Reliability levels of the scales were high:
The Materialism measure had a Cronbach’s alpha of .86; for Postmaterialism it was .87. The two work-family conflict measures both had a Cronbach’s alpha of .90.

Separate regressions were then run on the two outcome variables, FIW and WIF (Tables 1 and 2). The predictor variables were added in steps, consistent with study hypotheses: Step 1 included only the control variables; Step 2 added the materialism and postmaterialism scores; and Step 3 added the postmaterialism x materialism interaction.

### TABLE 1

**REGRESSION RESULTS ON FAMILY INTERFERENCE WITH WORK**

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
<th>Step 3</th>
<th></th>
</tr>
</thead>
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<tr>
<td></td>
<td>coeff.</td>
<td>s.e.</td>
<td>coeff.</td>
<td>s.e.</td>
<td>coeff.</td>
<td>s.e.</td>
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<td>***</td>
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<td>*</td>
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<td>.00</td>
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<td>.06</td>
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</tr>
<tr>
<td>Gender</td>
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<td>-.03</td>
<td></td>
<td>-.03</td>
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</tr>
<tr>
<td>Materialism</td>
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<td>***</td>
<td>.30</td>
<td></td>
<td>.30</td>
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</tr>
<tr>
<td>Postmaterialism</td>
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<td>-.08</td>
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<td>-.08</td>
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</tr>
<tr>
<td>Postmat. x Mat.</td>
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<td>.17</td>
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<td>.17</td>
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<tr>
<td>Model F</td>
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<td>*</td>
<td>2.48</td>
<td>**</td>
<td>2.32</td>
<td>**</td>
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<td>Δ R²</td>
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<td>**</td>
<td></td>
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<td>.991</td>
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</tbody>
</table>

Values are unstandardized coefficients; * p < .05; ** p < .01; *** p < .001

### Family Interference with Work as Dependent Variable

In Step 1, three control variables were significantly associated with FIW: social desirability, age, and position level. The control variables accounted for 11% of the variance in FIW. Step 2 (adding the materialism and postmaterialism scores) accounted for an additional six percent of variance explained in FIW. This increase in R² was largely due to materialism, which had a positive association with FIW (p < .001). Thus Hypothesis 1a received strong support. However, postmaterialism was not significantly related to FIW and so Hypothesis 2a was not supported. Step 3, which added the postmaterialism x materialism interaction, added little to variance explained and so, in regard to Research Question 3a, materialism did not moderate the relationship between postmaterialism and FIW.
Work Interference with Family as Dependent Variable

Results from analyses using WIF as the dependent variable largely mirrored results seen with WIF. In Step 1, three control variables were significantly associated with WIF: social desirability, age, and income. Step 1 accounted for 14% of the variance in WIF. Step 2 accounted for an additional eight percent of variance explained. As with FIW, the increase in $R^2$ was primarily due to materialism’s association with WIF ($p < .001$). Thus, Hypothesis 1b was supported. Again, postmaterialism was not significantly related to WIF so Hypothesis 2b was not supported. Step 3, which added the interaction term, added little variance explained in FIW.

### TABLE 2

**REGRESSION RESULTS ON WORK INTERFERENCE WITH FAMILY**

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>coeff.</td>
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<td>(.22)</td>
<td>-.49    *</td>
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<td>.447</td>
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</table>

Values are unstandardized coefficients; * $p < .05$; ** $p < .01$; *** $p < .001$

DISCUSSION

This study aimed to determine whether the individual values of materialism and postmaterialism were associated with perceived conflict between one’s work and family roles. The results supported two of the four study hypotheses and provided data to answer the two additional research questions. Specifically, the hypotheses concerning the relationship between materialism and both directions of work-family conflict (FIW and WIF) were strongly supported. However, no support was seen for the predicted association between postmaterialism and work-family conflict. Further, the interaction between materialism and postmaterialism was not significant for either FIW or WIF. An interpretation of these findings leads to several intriguing possibilities.
This study builds on burgeoning research in the work-family literature that is just beginning to address the issue of how values are connected to the work-family interface (Carlson & Kacmar, 2000). Results suggest that the examination of role conflict can be enhanced by assessing personal values. They also confirm findings from prior work that connected materialism to work-family conflict (Promislo et al., 2010). Specifically, materialistic individuals tend to focus more of their efforts on work because that is where they can satisfy desires for money and possessions. Not only do materialistic people appear to view family as interfering with work, but at the same time they recognize that their work presents conflicts with family.

This latter association between materialism and WIF is less intuitive – why would materialists report that work interferes with family? One possibility is that materialistic individuals sense that work is getting in the way of other parts of their lives, but feel helpless to do anything about it. For example, organizational cultures that emphasize long work hours can make it difficult to escape from demanding work schedules. Further, perceiving conflict does not mean that an individual necessarily cares about that conflict or wants to take actions to reduce it. For example, Hochschild (1997) explains how work can sometimes offer opportunities for socialization and achievement that may not exist at home.

While the hypotheses concerning postmaterialism were not supported, its potential links to work-family conflict were more speculative than those concerning materialism. This is because the basis for much of the literature on postmaterialism is the World Values Survey, which is used to assess global trends in values (Inglehart, 1990). Beyond the limitations of the current research (discussed below), a couple of possibilities exist for the lack of association between postmaterialism and work-family conflict.

First, postmaterialism may not result in less work-family conflict because the set of demands faced by postmaterialistic individuals may not actually decrease. In fact, postmaterialists may encounter a widening range of demands because of their desire to connect with other people (leading to such activities as volunteering and mentoring.) These types of endeavors are personally rewarding but can also be time-consuming.

Also, postmaterialistic values, because they are people-oriented, apply both at work and at home. For example, postmaterialists would likely infuse their values into work, community, family, and overall quality of life. So perhaps there are no differences in work-family conflict because postmaterialistic values are embedded in choices made in one’s career and with one’s family. In contrast, materialism applies more clearly to solely the work domain.

Concerning the relationship between the two values themselves, no interaction between materialism and postmaterialism was found. Since previous research on dimensionality has been inconsistent (Giacalone et al., 2008), this question is still unresolved. One possibility is that the interaction may be important in predicting certain outcomes but not others.

The findings from this study have practical ramifications, especially for human resource professionals. Many organizations recognize the costs associated with work-family conflict among their employees, particularly in terms of mental health problems (Frone, 2000). If values such as materialism are helping to create greater levels of work-family conflict, organizations can take steps to alleviate its impact. The emergence of “family-friendly” policies and strategies such as flextime (Kelly & Moen, 2007) can help to some extent, but formal programs alone will not solve work-family conflict caused by materialism since the value is deeply embedded in our society (Kasser, 2002). To address the issue more effectively, firms can initiate changes in corporate culture (Thompson et al., 1999) and compensation practices. For example, reward systems can be overhauled so that extrinsic rewards are given less importance (Kasser, Vansteenkiste, & Deckop, 2006). To promote intrinsic rewards, employees can be rewarded with greater autonomy at work (Kasser, 2002). Such rewards help to promote time with family, thus potentially reducing WFC. Organizations can also downplay messages of social status since materialistic individuals are acutely aware of status and will likely engage even more in work to achieve it.

Although postmaterialistic values were not associated with WFC in this study, organizations still may wish to support employees’ desires to help others. Charitable support by a company, particularly ongoing commitments, send a clear message that an organization is interested in more than just profits (Smith &
Sypher, 2010). Organizations can also give employees opportunities to perform work for local communities (Pajo & Lee, 2011). Such actions may also create an environment in which employees can better balance responsibilities at work and home, since they support the notion of caring for multiple stakeholders in one’s life.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The results of this research are not without limitations. First, the cross-sectional design of the study does not allow for causal inferences. The relationships among variables of interest were based on theoretical linkages, but there can be no definitive determination of the direction of influences. Further, as with all studies that use a self-report, questionnaire-based methodology, common method variance is a concern. In this study, collection of the independent and dependent variables occurred at two different times. This time split lessens (but cannot eliminate) worries about cognitive carryover among scales (Harrison & McLaughlin, 1993). Since the respondents in this study were recruited from a sample panel maintained by a third party, it is not possible to know the full range of organizations that the individuals worked for.

The findings from this study point to the need for future research in a number of areas. First, a fuller investigation into the types of conflict created by values such as materialism and postmaterialism is warranted. As noted previously, values may create certain conditions or actions that produce work-family conflict, but the mechanisms behind this process are not well understood. Once this information is obtained, organizations can put programs in place to better address specific factors leading to work-family conflict.

Second, researchers should consider other values beyond the ones in this study for a more robust examination of the antecedents of work-family conflict. One example is the six values in the Study of Values (Allport, Vernon, & Lindzey, 1970), and the terminal and instrumental values in the Rokeach Value Survey (Rokeach, 1973). Including a wider range of values would help fill the gap in our understanding of the causes of work-family conflict.

One last question is whether values are associated with work-family enrichment, which is “the extent to which experiences in one role improve the quality of life in the other role” (Greenhaus & Powell, 2006: 73). Since postmaterialism was not related to work-family conflict in this study, one enticing question is whether it might facilitate enrichment between work and family. Values focused on collectivist ideas could transfer particularly well from home to work (and vice versa).

In summary, work-family conflict continues to be a pressing concern that seems at least partly driven by one’s personal values. Further examination of this process will be useful for theoretical development, as well as for enabling organizations to reduce harmful levels of employees’ WFC that are associated with a host of negative outcomes.

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Improving Case-Based Learning with Clear Content and Simple Presentation

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Although cases are frequently used in business education, little is known about how the content and presentation of cases influence learning and performance. This article overviews eight studies which empirically tested how specific content as well as processes for working through case material influence case-based learning and transfer. Overall, these studies reveal the importance of structuring cases in a manner that simplifies learning, clearly emphasizing key concepts within the case content and concisely presenting case material as to focus attention on learning underlying principles useful in future situations. The direct implications for improving the effectiveness of case-based learning are discussed.

INTRODUCTION

Case-based learning has become a staple in the business school curriculum, with one program noting students analyze over 500 cases during their Masters of Business Administration studies (Garvin, 2004). These cases provide complex, real-world contexts to practice and apply a range of business principles, including finance (Correia & Mayall, 2012), management (Greenhalgh, 2007), information systems (Benbasat, Goldstein, & Mead, 1987), and marketing (Beverland & Lindgreen, 2010). By providing realistic problems, students can practice relevant skills and decision-making in a risk-free environment (Richardson, 1994), causing case-based learning to frequently prove more effective than lecturing in business disciplines (Bocker, 1987).
This widespread use of cases leads to extensive variety in both the content of cases and the processes by which students work with case material; however, several common themes emerge. With regard to general content, Garvin (2004) argues “less is more,” stressing the need to focus each case on only a few key principles. Despite suggestions to simplify content, many cases remain fairly lengthy (Richardson, 1994), with “brief” cases still including 5-8 text and 3-4 exhibit pages (Garvin, 2004). Some cases even extend over an entire semester (Walker, 2009). In addition to being lengthy, most cases describe realistic business contexts which mirror the “complexities and ambiguities of the practical world” (Barnes, Christensen, & Hansen, 1994, p. 44). Although the realistic contexts simulate today’s work environment and provide opportunities to practice forecasting effects of multiple courses of action (Greenhalgh, 2007), the content can become highly ambiguous, failing to explicitly state key guidelines in the content and making it difficult to identify and recall principles buried within cases (Kolodner, 1993).

Additionally, most cases include a variety of distracting, irrelevant information (Kim et al., 2006). Similar to actual business situations, the distracting information provides practice at deciphering between pertinent and non-pertinent facts (Garvin, 2003). Because the key causes are often hidden rather than clearly emphasized, however, students can sometimes misidentify key causes, limiting the effectiveness of case-based learning and problem-solving (Johnson et al., 2012). Case content is also generally loaded with facts and quantitative data to promote analysis (Currie & Tempest, 2008). In fact, Greenhalgh (2007) describes cases as “neutral descriptions of real-life business problems” (p. 181). Although facts facilitate logical analyses, most cases are overly rational and devoid of human emotion (Liang & Wang, 2004). Finally, most cases include no outcomes or only positive outcomes due to senior management biases (Currie & Tempest, 2008); rarely does case content explicitly describe negative case outcomes (Johnson et al., 2012).

Besides the content, cases can also differ in terms of how they are presented, altering the processes by which students work with case material (Herreid, 2011). Many programs present one case per learning objective (Garvin, 2003), providing either open-ended questions or highly structured prompts to facilitate case analysis (Schmidt, Rotgans, & Yew, 2011). Other presentation recommendations include chunking or segmenting cases into pieces to gradually disclose content (Kim et al., 2006), allowing students to generate their own cases (Currie & Tempest, 2008), or encouraging elaboration on a provided case (Bagdasarov et al., 2012a).

Benefits of Case-Based Learning

Despite the variations in the content and processes by which students work through cases, case-based learning generally offers many benefits. First, learners report positive reactions, finding cases motivating, enjoyable, and useful (Setia et al., 2011) as well as engaging and satisfying (Kim et al., 2006). Second, cases facilitate the development of domain-specific knowledge that may be generalized and applied to novel situations (Hammond, 1990). Given this, cases offer vicarious experiences for students to develop requisite business knowledge (Atkinson, 2008). Case-based reasoning also promotes a number of cognitive reasoning processes including problem identification (Azer, Peterson, Guerrero, & Edgren, 2012), inductive and deductive reasoning, and critical thinking skills (Kolodner, Owensby, & Guzdial, 2004), which greatly facilitate sensemaking (Mumford et al., 2008). Sensemaking is a cognitive process that helps individuals navigate and make sense of ambiguous events (Weick, 1995). More specifically, it involves actively gathering, interpreting, and integrating information into a mental model (Mumford et al., 2008) to help better understand the situation and ultimately inform decision-making. By engaging in sensemaking, case-based learners often demonstrate better decision-making, especially in uncertain situations (Correia & Mayall, 2012).

Problems with Case-based Learning

Despite these benefits, case-based learning is not without its criticism (Stonham, 1994; Mumford, 2005). As noted by Brennan and Ahmad (2005), while business cases are realistic in their inclusion of complex and ambiguous scenarios, this may cause high anxiety among students, in turn decreasing satisfaction and engagement. Indeed, too much ambiguity and irrelevant information can reduce learning
of critical concepts (Correia & Mayall, 2012). Similarly, the process for working through case material is often ambiguous and unstructured, potentially resulting in suboptimal processing of case material (Correia & Mayall, 2012). Additionally, controversy exists concerning the effectiveness of case-based reasoning with regard to knowledge acquisition and transfer (Stonham, 1994), especially when learners focus solely on extraneous, case-specific details (Loewenstein, Thompson, & Gentner, 2003).

One reason why cases may not always promote knowledge acquisition and transfer is due to the complexity inherent in case-based knowledge structures (Aamodt & Plaza, 1994). There are many ways to structure the content and presentation of cases to encourage knowledge acquisition and transfer, with some methods resulting in more effective outcomes than others. Thus, a question is raised concerning what aspects of case content should be emphasized and what processes for presenting case material are most effective. In fact, there is a call for more empirical research to understand how best to construct and present case material to optimize case-based learning outcomes (Azer et al., 2012; Currie & Tempest, 2008; Kim et al., 2006).

Therefore, the purpose of this article is to overview eight studies which empirically tested how specific content and processes for working through case material influence case-based learning and transfer. Overall, these studies revealed the importance of structuring cases in a manner that simplifies learning. This can be achieved by clearly emphasizing key concepts within case content and by concisely presenting case material so as to focus attention on learning underlying principles which can be generalized for use in future situations. These results have direct implications for improving the effectiveness of case-based learning.

EMPIRICAL EVIDENCE FOR IMPROVING CASE-BASED LEARNING

General Procedures

Sample

Participants for all eight studies were graduate students fulfilling a university-mandated Responsible Conduct for Research (RCR) training program - a case-based problem-solving course designed to promote better ethical decision-making. Participants represented a range of disciplines including social, biological, health, business, and engineering sciences, as well as humanities and performing arts.

Procedure

RCR training consisted of a two-day, 16-hour course. All empirical studies were embedded into the second day of training, lasting approximately 1.5 hours. Participants were randomly assigned to conditions when they received the first of two packets. This packet contained case material manipulated for either case content (e.g., affective vs. no affective content) or the processes by which case material was presented (e.g., comparing cases vs. sequential cases). After completing the first packet of manipulated case content or process materials, participants received a second packet of case-based effectiveness measures. Specifically, participants completed a satisfaction survey to assess reactions to the cases and a multiple-choice measure to assess case-based knowledge acquisition. Transfer of case-based knowledge was assessed through a low-fidelity decision-making task in which trainees read a new ethical case and responded to open-ended questions designed to elicit cognitive sensemaking processes (causal analysis, constraint analysis, forecasting), sensemaking strategies (see Appendix A), and decision-making. All responses were coded by four trained raters using criteria outlined by Mumford et al. (2008). In addition to assessing short-term decision-making, some studies also assessed far-transfer of decision-making through performance on a post training ethical decision-making measure occurring at the end of training (Mumford et al., 2006).

Case Content

Four experiments manipulating case content revealed content which clearly emphasizes social context, forecasting, guidelines, key causes, negative outcomes, and affective information improves case-based learning and transfer.
Social Context and Goal Focus

Because cases frequently include rich contextual details, Bagdasarov and colleagues (2012b) examined the influences of embedding clear information about the social setting and characters’ goal focus on execution of sensemaking processes and overall decision-making. Employing a randomized between-subjects design, goals and social context were manipulated in a 2 (social setting: autonomy-supportive vs. controlling) x 2 (goal focus: promotion vs. prevention) experimental study, with a separate comparison group. The social setting was manipulated within two ethics cases to portray either an autonomy-supportive or a controlling laboratory environment. The autonomy-supportive environment reflected a laboratory where students worked in a comfortable atmosphere with their trusting supervisor, while a controlling environment was defined by exerting pressure on students via strict deadlines, potential punishments, and lack of guidelines and autonomy. Characters’ goal focus was defined as either promotion- or prevention-seeking. Main characters portrayed in the case as promotion-seeking were in desperate need to attain positive outcomes, succeed, and gain their supervisor’s approval. On the contrary, characters described as prevention-seeking yearned to prevent failure, circumvent angering their supervisors, and avoid losses at all cost. Findings of this study indicated that participants who read cases depicting autonomy-supportive social settings outperformed their counterparts on certain sensemaking processes (i.e., constraint and forecasting analyses) and overall decision-making. Goal focus, however, appeared to have a weak influence on the outcome variables, with only forecast quality benefitting from a description of prevention-focused goals. Goal focus did not affect participants’ decision-making or execution of other important sensemaking processes. Ultimately, these findings suggest a clear need for cases to provide a rich and realistic description of the setting in order to promote engagement and interest on the part of the reader and to improve sensemaking processes.

Forecasting and Guidelines

Although the ambiguous nature of cases can facilitate forecasting (Greenhalgh, 2007), few cases explicitly provide forecasting information or relevant guidelines within the case content, despite the benefits of forecasting (Lonergan, Scott, & Mumford, 2004) and guidelines (O’Fallon & Butterfield, 2005) for improving decision-making. Therefore, Harkrider and colleagues (2012b) implemented a 2 (forecasting: short-term vs. long-term) x 2 (guidelines: guidelines only vs. guidelines within context) between-subjects design with a fifth control condition to test how case content influences learning and transfer. Forecasting content was manipulated to either include potential short-term forecasts, focusing on outcomes possible in a few weeks (e.g., meeting external deadlines), or long-term forecasts, focusing on outcomes possible in distant years (e.g., future lab funding). Guidelines included either guidelines only, mentioning a university guideline helpful for decision-making (e.g., fabrication rules), or guidelines within context, including the same guideline with additional situational information explaining why the guideline is pertinent (e.g., false results harm public). The control group’s cases did not have explicit forecasting or guideline content.

As predicted, results revealed cases with forecasting content led to significantly greater knowledge acquisition and sensemaking strategy use compared to cases without forecasting content. Compared to no guidelines, cases including guidelines showed significantly greater knowledge acquisition, sensemaking strategy use, and better decision-making on a transfer task. Because forecasting and guidelines are underlying principles applicable in most cases, content clearly emphasizing these concepts may have facilitated encoding and indexing based on these generalizable features, resulting in easier recall in a transfer situation (Kolodner, 1993). A significant interaction between forecasting and guidelines was also found. When content included short-term forecasts, guidelines only led to higher satisfaction and sensemaking strategy use than when guidelines were embedded within context. The additional contextual information may have only distracted trainees from recognizing how to directly apply the guidelines in the immediate situation (Bommer, Gratto, Gravander, & Tuttle, 1987). When forecasting long-term, guidelines within context compared to guidelines only yielded greater satisfaction and strategy use; contextualizing the guidelines provided insight regarding how to apply the guidelines given the complex,
future situations considered (Bommer et al., 1987). Overall, these results suggest cases should include forecasting and guidelines content to improve learning and transfer.

**Key Causes and Negative Outcomes**

Existing literature recommends that a “good” case seeks to promote clear cause-and-effect reasoning in case content; however, such recommendations have been subject to little empirical scrutiny (Kolodner et al., 2004). Additionally, research findings demonstrate that novice problem-solvers tend to produce overly-optimistic forecasts while experienced problem-solvers are better at identifying potential constraints and contingencies (Xiao, Milgram, & Doyle, 1997). In contrast, Stenmark et al. (2011) demonstrated that examining both positive and negative outcomes may provide a more holistic, complete picture and that important causal information in a case promotes forecasting and problem-solving performance (Stenmark et al., 2010). To better delineate the importance of causal and outcome information, Johnson et al. (2012) implemented a 2 (cause complexity: high vs. low) × 2 (outcome valence: negative vs. mixed) between-subjects design with a fifth comparison condition to test how case content influences learning and transfer. Cause complexity was manipulated by providing different amounts of cause content in each condition: low cause complexity contained three causes while cases with high cause complexity contained seven. Outcome valence content was defined as whether case outcomes were negative or mixed (e.g. positive and negative) and was manipulated by presenting participants with either four negative outcomes or two negative and two positive outcomes.

Study results indicated that participants in the low cause complexity condition produced longer, higher quality forecasts, a skill shown to be hampered when presented with an overwhelming amount of competing, causal information (Mumford, 2003; Stenmark et al., 2010). Additionally, these individuals produced significantly more negative forecasts, a strategy more characteristic of experienced case-based problem solvers (Xiao et al., 1997). Results for outcome valence indicated that participants given negative outcomes performed better than mixed-valence case content, identifying more causes and more critical causes/constraints. Finally, participants who received negative case content performed significantly better on a far-transfer measure of decision-making, meaning that exposure to negative outcomes resulted in a long-term, sustained increase in decision-making performance over the remainder of the RCR case-based training course. Results from Johnson et al. (2012) indicate that (1) limiting causal content to critical, key causes and (2) including negative case content both have a significant, sustained impact on case-based problem solving performance and facilitates cause-and-effect reasoning in trainees.

**Affect and Socio-Relational Context**

Although cases are typically devoid of emotion, many researchers argue the inclusion of emotion content may improve case-based learning (Currie & Tempest, 2008; Gaudine & Thorne, 2001). Additionally, elements such as socio-relational context (e.g. interpersonal relationships, norms, and expressions) are important to provide a realistic, descriptive setting for emotion content to take place and may impact how emotional content is processed and responded to (Van Kleef, 2009). Thiel et al. (2011) investigated the influence of emotional and socio-relational content embedded within cases with a 3 (cause emotional content: primary actors vs. secondary actors vs. no emotional content) × 2 (socio-relational power: present vs. absent) between-subjects design. Results demonstrated that individuals acquired more case-based knowledge when descriptions of case characters’ emotional experiences were included for both primary and secondary characters, regardless of socio-relational content. Participants who read cases with emotional content performed better on sensemaking processes (identification of critical causes/constraints and forecasting quality) and decision-making performance. Ultimately, Thiel et al. (2011) demonstrates that case content has a significant effect on case-based knowledge acquisition and problem-solving ability, and suggests a need for cases to include realistic, emotionally evocative case content.
Case Presentation

Four experiments manipulating case presentation revealed presenting cases in a manner which simplifies the process for working with case material improves learning effectiveness.

Elaboration and Writing of Cases

In a study investigating the unique and joint effects of two prominent instructional strategies (i.e., elaboration and writing of cases), Bagdasarov et al. (2012a) tested the usefulness of these pedagogical techniques on knowledge acquisition, execution of sensemaking processes and strategies, and overall performance on a decision-making task. Elaboration “involves meaning-enhancing additions, constructions, or generations that improve one’s memory for what is being learned” (Levin, 1988, p. 191) and is touted by researchers for the positive effects it has on learners’ critical thinking, retention of information, and comprehension (Hamilton, 1999; Reder, 1980; Willoughby, Wood, McDermott, & McLaren, 2000). Writing of cases is another technique used by educators and stems from the “writing-to-learn” literature. This literature suggests that a simple act of writing is highly powerful and conducive to general learning purposes (Hand & Prain, 2002; Rivard, 1994; Stewart, Myers, & Culley, 2010). Given the documented benefits of both techniques, Bagdasarov and colleagues (2012a) conducted a study having participants either (1) elaborate on a given case, (2) write their own case, (3) elaborate on their own case, or (4) write a brief response to a given case (control condition). Findings of this work consistently showed that participants who elaborated on a given case and those in the control condition outperformed the rest of the groups on all outcome variables. Additionally, participants who wrote and elaborated on their own cases produced the poorest results, suggesting that the task was too cognitively taxing. Thus, it appears that if asked to elaborate, learners should be given a well-written, structured case for analysis.

Case Comparisons and Structured Prompts

When cases are encoded based on details salient to a particular case rather than generalizable principles, recall and applications of lessons learned to new situations become difficult, reducing the effectiveness of case-based learning. Two methods for structuring case presentation, case comparisons and structured prompts, however, can reduce encoding and recall difficulties by focusing attention to and indexing of generalizable principles (Loewenstein et al., 2003). Harkrider et al. (2012a) used a 2 (case presentation: sequential vs. comparison) × 2 (prompts: unstructured vs. structured) between-subjects design to test the effects of case presentation on knowledge and transfer. Students read two counterbalanced cases either sequentially or simultaneously. The unstructured prompt was open-ended, asking students to identify important aspects of the situation, whereas structured prompts asked students to identify five underlying principles (e.g., causes, obstacles). Significant interactions were found such that some form of structure, either through comparing cases or structured prompts, improved effectiveness. Trainees were more satisfied, utilized sensemaking strategies more, and made better decisions when they compared cases using unstructured rather than structured prompts. When sequential cases were accompanied with structured rather than unstructured prompts, trainees displayed greater satisfaction and used more sensemaking strategies. When no structure guided learning (sequential cases with unstructured prompts), trainees were the least satisfied and used sensemaking strategies less. Because case material is complex, trainees may experience frustration when the learning environment fails to impose some structure that could reduce the difficulties with navigating these ill-defined problems (Kolodner, 1993). Trainees also lacked guidance on what aspects of the case they should encode (Loewenstein et al., 2003). Too much structure also proved problematic with the worst decision-making occurring when students compared cases using structured prompts. Overall, some structure should be used to simplify the presentation of case material.

Plot-Twists and Outcome Evaluation

In a follow-up of Bagdasarov et al. (2012a) and Harkrider et al. (2012a), and seeking to confirm previous findings for the need for case presentation simplicity, Peacock et al. (2012) examined two
alternative methods for case process presentation: presenting alternative case outcome scenarios and conducting structured outcome evaluation. Investigators implemented a 2 (alternative outcomes: present vs. absent) × 2 (structured outcome evaluation: present vs. absent) between-subjects design to test how case content influences learning and transfer. As hypothesized, and in accordance with previous findings calling for case presentation simplicity, Peacock et al. (2012) demonstrated that additional complexity (e.g., cases with alternative endings present) led to significant cognitive overload and general confusion compared to those who received the single, original case ending. Additionally, there was no significant difference found between structured and unstructured outcome evaluation. These findings have important implications for case presentation; specifically, novice case-based problem solvers are easily overwhelmed, be it due to case complexity, their lack of experience with case-based information, or both. Case-based instruction, especially for novices, should begin with clean, simple case exercises that cater to the abilities of the novice case-based problem solver. Increasing case complexity should only be introduced once a strong grasp of case-based fundamentals is acquired.

Incremental Case Building and Forecasting Outcomes

Learners must effectively identify structurally significant case aspects, as well as their interrelationships, in order to learn successfully from cases (Reimann & Schult, 1996; Loewenstein et al., 2003). Often, cases are presented in a complicated, incremental format which focuses learners’ attention away from key case aspects to peripheral, case-specific details, distracting learners when encoding and indexing material (Gentner, Loewenstein, & Thompson, 2003). Additionally, incremental presentation of case material induces a high degree of cognitive demand via sequential analytical evaluation (Ford, 1999) which further detracts from effective learning. Despite its negative influence, incremental case building is still implemented in case-based domains (e.g., Kim et al., 2006). Accordingly, MacDougall and colleagues (under review) sought to examine the influence of incremental case building alongside a well-established instructional process, forecasting outcomes, using a 2 (incremental case building: present vs. absent) × 2 (forecasting outcomes: present vs. absent) between-subjects design. For incremental case building, learners either received an incrementally built case with three sequential builds, or they received the original holistic case. For forecasting outcomes, learners either responded to forecasting prompt questions or to one generic question.

Results revealed an interaction for reaction such that learners preferred one, but not both, instructional process at a time. Even more, results demonstrated that learners were highly dissatisfied with incremental case building and that they tended to forecast more short-term rather than long-term outcomes when presented with an incrementally built case. This finding supports the notion that incrementally presented material draws learners to superfluous case information relevant only to the present situation, as opposed to broader and more structurally significant case aspects (Pask, 1976). Additionally, while forecasting improved case-based knowledge acquisition, it decreased sensemaking processes. Taken together, it is plausible that the strong negative reaction towards incremental case building, along with the influence of multiple task performance (e.g., Meyer & Kieras, 1997) and capacity limitation (e.g., Duncan, 1980) limited learners in their processing of material so much that it not only hindered, but negated, the effectiveness of forecasting outcomes. Overall, it is essential to avoid high levels of cognitive demand in case-based learning interventions and to provide learners with enough structure, albeit not too much, to work through cases.

DISCUSSION

Limitations

Before turning to the broader implications, several limitations are important to address. First, the sample included graduate students from a range of disciplines rather than business students specifically. Master’s and doctoral business students, however, were included in the sample, and there were no significant differences between graduate disciplines and case performance. Additionally, some results, such as the effectiveness of case comparisons, replicated findings found specifically on business
populations (Loewenstein et al., 2003). Although future research should examine whether these results apply specifically to a business population, the inclusion of business students in the sample and the replication of results suggests these findings will generalize to business students.

Second, all of these studies tested the effects of case content and presentation within an ethics domain rather than in a specific business context. Both the business environment and ethical situations, however, are characterized by complex, ambiguous, and ill-defined environments, suggesting the cases presented in these studies are similar to cases presented in other business disciplines (Thiel et al., 2012). Ethical decisions are also important in all business domains. In fact, Currie and Tempest (2008) suggest ethics is so important to business practices that all business cases should move beyond technical answers to also incorporate ethically and socially responsible decisions. Thus, the similarity between ethical and business contexts suggests these content and presentation recommendations should improve learning and transfer for not only ethical knowledge and decision-making but also other business skills. Third, although these studies examined an array of variables, future research should continue to examine how other content and presentation factors influence case-based learning. For example, these experiments focused on the self-study case-based learning although many case analyses include instructor-led or group discussions (Stonham, 1994).

Implications for Designing and Presenting Cases
Overall, the foregoing studies reveal the importance of structuring cases in a manner that simplifies learning, clearly emphasizing key concepts within the case content and concisely presenting case material as to focus attention on learning underlying principles useful in future situations. Besides promoting involvement and interest (Kim et al., 2006), cases should be carefully constructed, articulating key points within the content and presenting material in a manner which simplifies learning in order to improve case effectiveness. Although irrelevant information may mirror the complexities of the business world, too much irrelevant detail, failure to emphasize key content, and lengthy, confusing case presentations can overcomplicate the key principles and decrease learning and transfer (Abercrombie, 2011). These empirical studies provide several practical implications for designing and presenting business cases.

Content
The recently-conducted studies described earlier reveal the importance of clearly emphasizing key concepts when writing case content. Specifically, cases should explicitly include social context, forecasting, guidelines, key causes, negative outcomes, and affective content to improve satisfaction, knowledge acquisition, sensemaking, and decision-making. Several of the identified content attributes have already been incorporated into existing business cases and should continue to be emphasized. Specifically, a rich, realistic, and descriptive portrayal of the social environment is a highly important feature of every case (Atkinson, 2008). Providing readers with enough information to be able to conjure up an image of the setting where a certain situation transpired is essential (Bagdasarov et al., 2012b).

Aside from providing a detailed description of the social setting, recent evidence suggests that inclusion of forecasting information, guidelines, critical causes, negative outcomes, and emotion result in improved knowledge acquisition, enhanced execution of sensemaking strategies, and increased decision-making. Providing information regarding multiple potential consequences of action in cases is critical (Correia & Mayall, 2012). Considering multiple forecasts of probable outcomes allows a learner to better think through the situation, weigh the costs and benefits, and amend his/her chosen course of action if necessary (Harkrider et al., 2012b; Stenmark et al., 2010). Likewise, if the aim of a case is to relate information regarding appropriate or inappropriate behavior, it is particularly effective to emphasize specific guidelines (Harkrider et al., 2012b). Learners will encode the described guidelines and apply them when making decisions in future situations. Further, evidence regarding case content attributes illustrates the need for integration of critical causes and negative outcomes within cases (Johnson et al., 2012). Carefully delineating only the most important causes of the dilemma described in a case helps focus the reader’s attention on the vital components of an issue, rather than the non-pertinent distractors. It is also useful for learners to read cases that highlight negative outcomes (Johnson et al., 2012). Currie
and Tempest (2008) noted that students should be provided with an opportunity to recognize that there are other potential outcomes than a positive representation of a “heroic” senior manager (p. 48). Finally, it behooves case developers to include emotional information in their materials (Thiel et al., 2011). According to Herreid (1998), cases that build empathy with the central characters are not only more engaging to readers, but they also aid in decision-making. Cases that are devoid of emotional information tend to be too rational and thus lack the necessary “human” aspects that augment realism (Currie & Tempest, 2008).

Presentation
Besides carefully constructing case content, instructors should also simplify the presentation of case material, providing structure to enhance learning and transfer. It is no surprise that working through a complex case is not only cognitively taxing, but it tends to frustrate students. In fact, Harvard Business Publishing even offers The Case Analysis Coach, an online program that claims to equip students with “key concepts required for the reading, analysis, and interpretation of business case studies” (Monro, 2012). Thus, the following recommendations are made to alleviate the frustration learners may experience when tasked with reading and understanding case material.

First, it is important to keep cases brief (Herreid, 1998). Cases that are too long tend to include a large amount of distracting information not conducive to learning (Kim et al., 2006). Second, elaborating on structured, well-written cases can promote knowledge acquisition, sensemaking, and decision-making (Bagdasarov et al., 2012a). Third, when presenting case examples, allow learners enough examples to permit comparison of cases. Comparing cases promotes indexing of generalizable principles, improves recall, promotes sensemaking strategy application, and enhances decision-making (Gentner et al., 2003; Harkrider et al., 2012a). Similarly, providing learners with structured prompt questions which highlight key concepts and aid in indexing and recall will improve learning and transfer performance (Lee & Bae, 2008). Finally, case developers should be wary of providing numerous alternative outcomes and describing several different issues within a single case (Peacock et al., 2012). Likewise, presenting cases to learners in increments is not effective (MacDougall et al., under review). Such techniques function to induce cognitive load and impede the facilitative mechanisms of sensemaking. Ultimately, simplicity and structure count when it comes to the case method.

CONCLUSION

Overall, the empirical evidence supports less is more when it comes to case-based learning. By simplifying and structuring case content and processes, students can improve learning and transfer of business skills, increasing the effectiveness of case-based learning.

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**APPENDIX A**

**SENSEMAKING STRATEGIES**

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<tr>
<th>Strategy</th>
<th>Operational Definition</th>
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<tr>
<td>1 Recognizing your circumstances</td>
<td>Thinking about origins of problem, individuals involved, and relevant principles, goals &amp; values</td>
</tr>
<tr>
<td>2 Seeking outside help</td>
<td>Talking with a supervisor, peer, or institutional resource, or learning from others’ behaviors in similar situations</td>
</tr>
<tr>
<td>3 Questioning your own and others’ judgment</td>
<td>Considering problems that people often have with making ethical decisions, remembering that decisions are seldom perfect</td>
</tr>
<tr>
<td>4 Dealing with emotions</td>
<td>Assessing and regulating emotional reactions to the situation</td>
</tr>
<tr>
<td>5 Anticipating consequences of actions</td>
<td>Thinking about many possible outcomes such as consequences for others, short &amp; long term outcomes based upon possible decision alternatives</td>
</tr>
<tr>
<td>6 Analyzing personal motivations</td>
<td>Considering one's own biases, effects of one's values and goals, how to explain/justify one's actions to others, &amp; questioning ability to make ethical decisions</td>
</tr>
<tr>
<td>7 Considering the effects of actions on others</td>
<td>Being mindful of others’ perceptions, concerns, and the impact of your actions on others, socially and professionally</td>
</tr>
</tbody>
</table>
Organisational Resilience: Testing the Interaction Effect of Knowledge Management and Creative Climate

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Based on the premise that both knowledge management and creative climate influence the level of organizational resilience, this study examined the extent to which creative climate moderates the relationship between knowledge management and organizational resilience. Cross sectional data were collected from 51 parastatal organizations in Uganda to test the hypotheses. The study provides empirical evidence on the interaction effect of knowledge management and creative climate on organizational resilience in a public sector. The evidence shows that knowledge management does not interact with creative climate to influence the level of organizational resilience.

INTRODUCTION

Organisations operate under a dynamic environment that poses both threats and opportunities. The environment is quite turbulent that it requires organisational adaptation in order to cope with the dynamic stakeholder interests. There is need for organisations to cope with the threats and exploit opportunities based on useful knowledge subject to a creative climate (Nonaka, 2007; Amabile, 1997). The use of knowledge coupled with a conducive creative climate enables an organisation to adapt to a dynamic environment. This adaptation makes the organisation to become resilient. Organisational resilience is the capacity to respond to threats and opportunities in the environment order to prevent decay and disuse (Tarrant, 2010; McManus, 2008; Scott, 2007).

Organisational resilience can be examined in terms of organisational adaptation, organisational value and organisational competitiveness (Mafabi, Munene, Ntayi, 2012). Organisational resilience can be built based on Knowledge Management with the support of a creative climate (McManus, 2008; Weeks, 2008). The resource-based view that advocates for the accumulation of resources to enhance competitiveness (Barney, 1991) does not highlight the interplay between knowledge management and creative climate for influencing change. Some studies indicate that the creative climate is an important factor for enhancing change that leads to resilience (Weeks, 2008; Baer, Oldham & Cummings, 2003). These studies did not focus on the interaction effects of knowledge management and creative climate in a change program. Other studies by Mafabi et al. (2012), McManus (2008), Weeks (2008) have examined organisational
resilience without analysing the interaction effects of knowledge management and creative climate on building organisational resilience. This leaves a question of the extent to which creative climate moderates the relationship between Knowledge Management and organisational resilience.

Overall, organisational resilience is imperative for institutionalisation whereby society considers an organisation as valuable (Scott, 2007). However, Scott’s (2007) review of institutional theory that advocates for continuous reforms to prevent decay is implicit, about building organisational resilience. Despite the contribution of some studies and theories, the extent to which knowledge management and creative climate interact to influence organisational resilience remains elusive. The main purpose of this paper is to examine the interaction effect of knowledge management and creative climate towards building organisational resilience.

**THEORY AND HYPOTHESES**

**Organizational Resilience: Knowledge-Based View**

The knowledge-based theory assumes that organizations have knowledge resources that are created by individuals and groups through flexible interactions for change (Grant, 1996). Knowledge resources are so strategic to be used in building organizational competitiveness that they should be rare, valuable, inimitable, and non-substitutable. Nonaka’s (2007) knowledge-based theory which focuses mainly on knowledge creation assumes that an organization is an information processing entity for adaptation. The theory of knowledge creation views an organization as an organic change process of which Nonaka calls ‘ba’ meaning place, time, space, or relationship where there is dialogue and practice. From the concept of ba, we can deduce that knowledge for change can be created through work group support (Amabile, 1997). Organizations create knowledge based on values, context, and power all of which may require a creative climate.

**Knowledge Management and Organisational Resilience**

The transformation from the old economy to a new, knowledge-based economy is driven largely by the recognition that knowledge rather than financial capital, land or labour is the major source of continued economic growth, value and improved standards of living. Scholars have found out that organizations that disregard the tenets of the knowledge economy are unable to adapt in a timely manner hence likely to die in any form or become less competitive (e.g. Nonaka, 2007; Scott, 2007; Al-Hawamdeh, 2002).

In this era of global competition, organizations are knowledge organizations to the effect that they identify process, store, protect, and apply knowledge in their business strategies and operations – knowledge management. This has become imperative because of the fact that, it is now knowledge rather than any other resource that is of highest value to the organization (Warier, 2009, Al-Hawamdeh, 2002). To emphasise knowledge as a key resource, Seba and Rowley (2010) state that organizations in the public and private sectors are now focusing on knowledge management as part of their strategies to be competitive. The question that emerges from this focus is the extent to which knowledge management influences organizational resilience.

The focus on knowledge management by any organization is explained by globalisation with the increasing intensity of virtualisation or digitalisation, and the rise of the knowledge based economy which some scholars have referred to as third wave, information age, or knowledge society. Regardless of the terminology, the gist is that we now need knowledge workers and knowledge organizations to survive in the business environment (Warier, 2009).

As organisations become more knowledge-based, their success is dependent on how well knowledge workers develop and apply knowledge for organizational resilience. According to Warier (2009) and Al-Hawamdeh (2002), the knowledge economy demands that organisations integrate their goals, objectives, activities, processes and systems in order to exploit their resources more rationally in order to remain relevant to society especially the public sector organisations that seem to have lagged behind in the knowledge economy. The basic assumption of KM is that organisations that manage organisational and
individual knowledge better will deal more successfully with the challenges of the new business environment. The central task of those concerned with knowledge management is to determine ways to better cultivate, nurture and exploit knowledge at different levels and in different contexts for organizational competitiveness.

For the case of organizational competitiveness, scholars argue that, just like knowledge is accumulated over time, competitiveness is built over time (Leonard and Sensiper, 1998). In this vein, Bures (2008) asserts, though implicitly, that knowledge management if spread in a whole organization, can improve the competitiveness of an organization. This means that as organizations learn and accumulate knowledge, the individuals gain the ability to develop better or new ways of organizing business operations to improve competitiveness (Robinson, Anumba, Carrillo, & Al-Ghassani, 2006; Nelson, 2003; Ongaro, 2004), adaptation (Weeks, 2008), and value (Moore, 2003).

Bennet and Bennet (2003) found out that a successful knowledge organisation is characterized by: high performance, customer-driven, improvement-driven, high flexibility and adaptiveness, high levels of expertise and knowledge, high rates of learning and innovation. This finding does not clearly reveal the antecedent and criterion variables among the listed organizational practices despite the fact that these practices relate to knowledge management, creative climate, and organizational resilience.

Other studies have emphasized that building knowledge capability should be an investment of the organization with a focus to improve competitiveness (Stewart & O’Donnell, 2007; Dutrenit, 2004). Organizations should acquire, learn, and accumulate competences over time, and progressively use them to add value to business activities (Robinson, et al., 2006; Ongaro, 2004). The question that remains is how knowledge management like acquisition, learning, and accumulation of competences interact with the creative climate to influence organisational resilience.

Knowledge resources are accumulated through organizational routines that enhance organizational value, adaptation and competitiveness (Ongaro, 2004; Nelson, 2003). This enhancement is most likely dependent on the conditional effect of the creative climate (Amabile, 1997). Organizational routines are a form of learning which probably takes place through sharing information among organizational members and stakeholders like suppliers and customers. Knowledge sharing though is not as smooth as it should be due to certain challenges. For instance, Seba and Rowley’s study (2010) found that most employees in the public sector consider that knowledge sharing may lead to loss of power and this belief makes it difficult to promote knowledge sharing amongst staff.

To mitigate knowledge sharing challenges, Elenurm (2003), Seba and Rowley (2010) found out that the readiness of employees to share their expert information with others, followed by trust between employees as a basis for knowledge sharing and recognizing the knowledge of employees via bonus schemes are some of the drivers for knowledge sharing in organizations. It appears that knowledge management practices like knowledge sharing require a good perception of organizational support and work group support to promote the exchange and transfer of knowledge (Warier, 2009).

Although Warier does not explicitly state the interaction of knowledge management and creative climate, he posits that for successful knowledge management practices in an organization, there is need for a supportive climate. In a related argument, Davenport (1998) found evidence for the role of organizational support for successful knowledge management outcomes which outcomes could be like organizational resilience. This can also imply that successful knowledge management outcomes interact with organizational support. The extant literature seems to be limited in as far as testing for interactions in organizational resilience studies is concerned.

This review reveals two hypotheses:

\[ H_1: \text{Knowledge management will be positively related to organizational resilience.} \]

\[ H_2: \text{The relationship between knowledge management and organizational resilience will be moderated by creative climate.} \]
Creative Climate and Organisational Resilience

The creative climate is imperative for providing a conducive environment for organisational renewals. There is need for organizational support that can facilitate sustainable organizational adaptation and competitiveness (Weeks, 2008; Amabile, 1997). This support may include provision of necessary facilities, supervisory support, and team support. Indeed Ensor, et al. (2006) found evidence in advertising agencies that work group support and lack of organisational impediments, enhance creativity and competitiveness in those firms. Scholars argue that an organization with a poor creative climate may be characterized with organizational dysfunctions (Panuwatwanich, et al., 2009). A poor creative climate may for instance constrain employee initiative (e.g. Muhairwe, 2010) who reports that corporation managers in Uganda have limited initiative to create value in service delivery as they are preoccupied with preordained statutory mandates of the corporation.

According to Martensen and Dahlgaard (1999), companies must continuously adapt, based on a creative climate. These scholars argue that, because of the need for business excellence, organizations must react quickly to new market conditions and customer needs using creative solutions. An organization with a creative climate encourages employees to have a positive mindset so that they can be creative and bring up new ideas during times of turbulence (Tarrant, 2010). Creative organisations develop new concepts that can be used to build adaptive capacity for organizational adaptation (Weeks, 2008).

Klijn and Tomic (2010) describe creative organizations as those that provide; time and resources for experimentation, competence-building opportunities, reward systems, cohesion, some discretion in job activities, clear vision and goals, and an atmosphere in which employees feel safe to share novel ideas. Furthermore, in a bid to promote a creativity stimulating climate, they call for open communication, sharing of knowledge, tolerance for failure, setting challenging targets, and allowing in-house entrepreneurship. Similarly, Amabile et al. (1996) developed a tool for assessing perceived stimulants and obstacles in organizational work environments that lead to organizational effectiveness and a necessity for long-term survival.

The climate for creativity depends on perceptions of the work environment measured as organizational and supervisory encouragement, work group support, freedom, sufficient resources, challenging work, workload pressure, and organizational impediments (Amabile, et al., 1996). However, Klijn and Tomic (2010) argue that these measures need further validation and probably reconceptualisation depending on the nature of the study. Nevertheless, organizations should adopt the various dimensions of a creative climate that can be relied on to contribute to organizational adaptation, organizational competitiveness, and organizational value which are indicators of organizational resilience (Mafabi, et al., 2012).

Cangemi and Miller (2007) warn of dire consequences of organisational dysfunctionality if management of the organization fails to provide a creative climate. For instance, these scholars argue that in an organization with a poor creative climate, people become closed and guarded, are reluctant to offer newer creative ideas because the ideas are disregarded, devalued, taken by management with no recognition to the originator. Therefore, Cangemi and Miller (2007) argue that a creative organization has a diverse workforce, fosters a sense of worker ownership in the company, builds organisational trust, considers problems as improvement opportunities. In such organizations, calmness and long-term orientation prevail in the face of adversity (Tarrant, 2010). This makes people in such an organization feel comfortable in suggesting creative solutions to make the organization resilient. Such organizations possess true transparency, encourage employees to work beyond the basic job description, and operate out-of-the-box to adapt and survive in a dynamic environment (Weeks, 2008; Cangemi and Miller (2007).

Muhairwe (2010) reports a case of a public water corporation in Uganda which had lost value and was due for privatization, where management drew an organizational resilience 100 days change program that made the corporation a creative organisation and recovered the corporation to better service delivery and value. Similarly, Cangemi and Miller (2007) present an organizational recovery case based on a creative organization. According to Cangemi and Miller (2007), there was a plant in the USA that was restructured and operations became more efficient and cost-effective, costs were cut by 25 percent,
productivity improved by 15 percent, and production increased by more than 50 percent, inventories lower by 40 percent. It was a challenging but necessary transformation process which was facilitated by the wholehearted support and commitment of all employees. The company was destined to win the prestigious North American Best Plants Award, which is presented by the business magazine Industry Week. This review leads to a hypothesis that.

\[ H_3: \text{Creative climate will be positively related to organisational resilience.} \]

**METHOD**

The population consisted of parastatal organisations in Uganda. Parastatal organisations are very important institutions charged with public service delivery. Parastatals are formed to improve service delivery on behalf of government yet reports seem to suggest that parastatals are not of much value to society (Rondinelli, 2008). Organisations should strive to remain useful to society by providing competitive services lest they lose their vision, mission, and mandate (Basu, 2008). In other words, they should be resilient enough to cope with certain challenges. Organisational resilience which has been qualitatively studied in private sector (McManus, 2008) appears to be the least explored in the public sector. This study focused on the public organisations, specifically parastatals in Uganda. The researchers randomly selected 62 out of 73 parastatal organisations that participated in the study. The researchers collected 235 usable questionnaires that were filled by managers. The results of the sample distribution show that majority (88.2%) of organisations were fully owned by the government with only 11.8% that were partially owned by government. Full ownership in this study refers to the organization where government has overall control of the functioning of that organization with exception of autonomous management and administration of the organization. Partial ownership describes those organizations where government has limited interest by some share holding in such organizations. For the case of age of the study organizations, majority (64.7%) had existed for over 15 fifteen years, followed by 21.6% which had been in existence between 11 – 14 years, 11.8% had served between 7 – 10 years with only 1.9% that had served between 3 – 6 years. The minimum age of the organizations studied was in line with the selection criterion of an organization of three and above years to have been chosen for the study. This was in view of the fact that within this time an organization is expected to be undergoing or should have undergone certain reforms like innovations which was of interest in this study. Results about the size of the organization reveal a fair distribution of the number of employees in different study organizations, that is; those that had less than 100 employees were 27.5%, 501 – 700 were 23.5%, 101 – 300 were 19.8 %, with 9.8% that had 301 – 500 employees. Generally, most of the organizations employed relatively large numbers of people which is one of the objectives of a parastatal.

In analyzing the sample distribution in the different sectors, we note that the majority of the organizations studied were in the finance sector (25.5%) and education sector (21.6%). This implies that most parastatals in Uganda are set up to pursue the finance and or economic objectives including education objectives. Another set of the organizations was from the energy sector (11.8%), with a relatively equal distribution of parastatals in health, environment, and agriculture (5.9%), tourism and telecommunication (3.9%), though those in the transport sector and miscellaneous were a little more (7.8%). Those in the miscellaneous sector category were cases of standardization and media, among others. Generally, we observe that the Government of Uganda has set up different parastatals in different sectors to provide specialized services despite the fact that majority are in the finance and education sectors. For the unit of inquiry, we selected members of the senior management team in each parastatal organization, because they occupy strategic positions (O’Regan & Ghobadian, 2004), to report about organizational resilience which is a strategic function. It is believed that managers are in position to truly respond to questions about organizational attributes (Baer & Frese, 2003). The researchers targeted seven managers to be given questionnaires with a minimum response expectation of three respondents per organization (Baer & Frese, 2003) and we actually got a total of 242 respondents who answered the questionnaires, though we found 235 usable questionnaires.
Measures

Through literature review and conceptualization, we identified certain measures of knowledge management, creative climate, and organisational resilience.

Knowledge Management

There seems to be little consensus about the general understanding and measure of knowledge management as the concept has a multidimensional interpretation (Nonaka, 2007). Nevertheless, knowledge management involves; knowledge creation, knowledge acquisition, knowledge sharing, and knowledge storage (Nonaka, 2007, Darroch, 2003), which we accordingly followed in developing our scales to suit the study context. While developing the scales, we made further reference to study of Lopez, et al. (2005) which highlights knowledge management behaviours. In the scales, we asked the respondents to indicate their level of agreement or disagreement with the behaviours of knowledge management prevailing in their organizations. We tested for reliability (α = .894) and validity (total variance explained = 68.5%).

Creative Climate

The climate for creativity was used to investigate how the prevailing work environment supports creativity in parastatal organizations. To achieve this, we employed Amabile's (1997) KEYS research tool. The tool captures the perceptions managers have about their work environment. The instrument has various scales ranging from organizational encouragement, supervisory encouragement, work group support, freedom, sufficient resources, challenging work, workload pressure, and organizational impediments including criterion scales of creativity, and productivity. The first three scales are categorized as those of creativity encouragement as used by Ensor, et al. (2006) at organizational level and we accordingly adapted them for our study. We tested for reliability (α = .881) and validity (total variance explained = 64.6%).

Organisational Resilience

There seems to be no universally accepted measure of organizational resilience (McManus, 2008). The researchers conceptualised and identified measures of organizational resilience with reference to the relevant theory and extant literature. In this study, we conceptualized organizational resilience to be measured in terms of: organizational adaptation (Weeks, 2008; Hamel and Valikangas, 2003); organisational competitiveness (Li-Hua, 2007); and organizational value (Moore, 2003). These scholars believe that a resilient organization is one that responds to the demands in the environment for survival (organisational adaptation), is efficient and effective at service delivery (organisational competitiveness), and makes itself reputable (organizational value). The scales of organizational resilience were developed on a Likert scale and tested for reliability (α = .893) and validity (total variance explained by three convergent factors = 69.7%). In the scales, the researchers made statements that required the respondents to indicate the extent to which certain resilience behaviors occur in their organizations.

Data Management

We examined the pattern of the missing values and a few (07) cases that had missing values were discarded leaving 235 usable cases that were later on aggregated into 51 cases according to the unit of analysis which was parastatal organisation. We tested for common method bias using Harmans’ one factor test and found limited method variance because the test extracted 17 factors (eigenvalues > 1, total variance = 85.1% ) where the first factor did not explain majority of the variance (Podsakoff, et al., 2003).

An interaction is believed to occur if the effect of the independent variable on the dependent variable varies as a function of the changes in the moderator (Friedrich, 1982; Baron & Kenny, 1986; Preacher, Curran, & Bauer, 2006).

Jose (2008) states that researchers must test for interaction by; centering the predictor variables (subtracting the mean from all the scores to get marginal mean scores), getting a product of the centred variables to get the interaction term that is used to test for interaction through moderated hierarchical
regression. In this study, we centred the predictor variables, set the interaction term and ran the hierarchical regression. Scholars of interaction testing indicate that, if the beta coefficient of the interaction term is significant, then the researcher would have proved the occurrence of interaction in the model (Friedrich, 1982; Baron & Kenny, 1986; Preacher, et al., 2006; Jose, 2008). The analysis in this study revealed that the beta coefficient of the interaction term was not significant. According to Jose (2008), the researcher must further draw interaction graphs using the Modgraph to determine if the lines are not parallel in order to confirm interaction in the model. The researchers used hierarchical regression to test the hypotheses.

RESULTS AND DISCUSSION

The zero order correlation was used to establish whether or not there were associations between the study variables. The table below presents the results of the zero order correlation.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT, CREATIVE CLIMATE, AND ORGANIZATIONAL RESILIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>n = 51</td>
<td>Mean</td>
</tr>
<tr>
<td>1</td>
<td>Organisational resilience</td>
</tr>
<tr>
<td>2</td>
<td>Creative climate</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge management</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)**

Creative Climate and Organizational Resilience

The results in table 1 above show that there is a strong and positive significant relationship between creative climate and organizational resilience (r = .663, p < .05). This finding implies that changes in the creative climate are associated with changes in the level of organizational resilience. In other words, the better the creative climate, the higher the level of organizational resilience (Weeks, 2008).

Knowledge Management and Organizational Resilience

The study further sought to examine the relationship between knowledge management and organizational resilience and the results indeed reveal that the relationship between knowledge management and organizational resilience is fairly strong, positive, and significant (r = .464, p < .05). This implies that, the management of knowledge in the organization is associated with the building of organizational resilience. This finding supports previous studies which state that when organizations improve their knowledge capability, this capability may be related to a higher level of organisational competitiveness (e.g. Stewart & O’Donnell, 2007).

Having analysed the correlations between the variables, the explanatory power of knowledge management, creative climate, on organizational resilience and the interaction effects were tested using hierarchical regression. The results are presented in table 2 below.
TABLE 2  
INTERACTION EFFECT OF KNOWLEDGE MANAGEMENT AND CREATIVE CLIMATE ON ORGANIZATIONAL RESILIENCE

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.020</td>
<td>.021</td>
<td>.014</td>
<td></td>
</tr>
<tr>
<td>Knowledge management (Main effect)</td>
<td>.464**</td>
<td>.151</td>
<td>.123</td>
<td>2.6</td>
</tr>
<tr>
<td>Creative climate (Moderator)</td>
<td></td>
<td>.782**</td>
<td>.789**</td>
<td>2.6</td>
</tr>
<tr>
<td>Interaction term</td>
<td></td>
<td></td>
<td>.057</td>
<td>1.5</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.215</td>
<td>.449</td>
<td>.451</td>
<td></td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td></td>
<td>.234</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>$\Delta F$</td>
<td>13.445**</td>
<td>20.308**</td>
<td>.186</td>
<td></td>
</tr>
</tbody>
</table>

**p < .01

The results in table 2 indicate an insignificant relationship between knowledge management and organizational resilience ($\beta = .123, p > .05$). This finding therefore does not lend further support for hypothesis H1 which had been stated that knowledge management will be positively related to organizational resilience. The insignificant relationship between knowledge management and organizational resilience may presuppose an indirect relationship that requires a mediator like innovation. This assertion was tested by Mafabi, et al. (2012) using the mediation test and indeed their results confirm that the relationship between knowledge management and organizational resilience is indirect and the relationship is significant only through the mediation effect of innovation.

The results also revealed a significant relationship between creative climate and organizational resilience ($\beta = .782, p < .05$) providing support for H3. This finding is line with Ensor, et al.’s (2006) study that provides evidence from advertising agencies that work group support and lack of organisational impediments, enhance creativity and competitiveness in those firms.

From the results obtained in table 2 above, we note that the interaction effect is not significant ($\beta = .057, p > .05$) with an insignificant and very small explained variance added to the model ($\Delta R^2 = .002, p > .05$). We also take cognizance of the fact that the main effects and the moderator account for 44.9% of the variance explained in the dependent variable out of the overall 45.1%. Since the interaction term is not significant in the third model, we can now state that hypothesis H2 is not supported.

Therefore evidence suggests that there is no significant interaction effect of knowledge management and creative climate on organizational resilience. It appears then that, the regression model used to test for interaction remains additive in that the contribution of knowledge management is independent of the contribution of creative climate to building organizational resilience (Friedrich, 1982). This finding is contrary to the non-additive model that we anticipated through the belief that the contribution of knowledge management to organizational resilience varies as a function of creative climate.

According to Jose (2008), there is need to confirm the interaction or none by graphing the means and standard deviations with unstandardised regression coefficients of; knowledge management (main effects), creative climate (moderator), and the interaction term. The graphing was done and the results are presented in the figure 1 below.
FIGURE 1
A GRAPH SHOWING INTERACTION EFFECT OF KNOWLEDGE MANAGEMENT AND
CREATIVE CLIMATE ON ORGANIZATIONAL RESILIENCE

The results in figure 1 above further indicate that there is no interaction effect of knowledge management and creative climate on organizational resilience since according to Jose (2008) the lines are parallel implying no interaction of the main effect with the moderator. What this means is that, the changes in the levels of creative climate do not significantly affect the variation in knowledge management in an attempt to influence organizational resilience. This finding still does not lend any support to hypothesis H2. In any case we did not expect any change of the results after the hierarchical regression had showed non-significant interaction term.

Further interpretation of the graph in terms of low, medium, high levels of the main effects and the moderator (Jose, 2008) is that the levels vary from one standard deviation below the mean (low), the mean level (medium), one standard deviation above the mean (high). Following this interpretation, an interaction occurs if the variation in the levels of the main effects depends on the variation in the levels of the moderator (Jose, 2008). Again in this study, this conditional effect is not met since the lines are parallel suggesting non-interaction. This finding does not support the assertion that knowledge management practices like knowledge sharing require a good perception of organizational support and work group support to promote the exchange and transfer of knowledge for successful outcomes (e.g. Warier, 2009).

The main purpose of this paper is to examine the interaction effect of knowledge management and creative climate towards building organisational resilience. In essence, the study examined the moderation effect of the creative climate on the relationship between knowledge management and organisational resilience. The findings indicate that the creative climate does not significantly moderate the relationship
between knowledge management and organisational resilience. The reason for the non interaction of knowledge management with the creative climate could be that managers in Ugandan parastatals carry out knowledge management practices without due regard to the nature of the creative climate prevailing in the parastatal. Another plausible explanation may be that parastatal managers do not have specific organisational change objectives that aim at enhancing the creative climate in tandem with knowledge management practices in a bid to build organisational resilience. In other words, the organisational support in parastatal organisations may be general, not aligned specifically to build organisational resilience based on knowledge management practices.

The findings do not support extant literature where for instance Warier (2009) stated that, for successful knowledge management practices in an organization, there is need for a supportive climate. In the same vein, Davenport (1998) found evidence for the role of organizational support for successful knowledge management outcomes like organizational resilience. Despite the fact that Davenport’s study did not test for interactions, it was implied that knowledge management interacts with organizational support to influence successful knowledge management outcomes.

CONCLUSION AND IMPLICATIONS

Arising out of the findings and discussion, there is no direct influence knowledge management on organisational resilience. Changes in the practices of knowledge management are not associated with the level of organisational resilience. It appears the management of knowledge requires a mediation mechanism to transform the effect of knowledge management practices onto the level of organisational resilience. The state of the creative climate has an influence on the level of organisational resilience. When the creative climate is favourable for staff to generate and execute novel ideas, such a practice is associated with higher organisational resilience. Knowledge management does not depend on the creative climate to influence the level of organizational resilience in the parastatal sector. This implies that managers in the parastatal sector in Uganda can carry out knowledge management activities to improve organizational resilience without necessarily relying on the contribution of the creative climate.

In this study, we draw human resource management policy implications. There is need for managers in parastatals to design attractive human resource management policies that are geared towards considering human resources as the engine for driving the value of parastatal organizations. The human resource management policy should emphasise the sourcing, attraction, development, and retention of human resources the parastatal considers critical for organizational value addition. Managers of parastatals should build resilience by providing a conducive climate where there is perceived organizational support and work group support for promoting organizational health. There is need for parastatals to become creative organizations by providing; time and resources for experimentation, competence-building opportunities, reward systems, cohesion, some discretion in job activities, clear vision and goals, and an atmosphere in which employees feel safe to share novel ideas. Furthermore, they should promote open communication, sharing of knowledge, tolerance for failure, setting challenging targets and allowing in-house entrepreneurship.

The study was limited by design. First, the study was cross sectional focusing on snapshot perceptions which could not provide longterm occurrences of study variables. This may necessitate follow up studies in a longitudinal design to capture the trend of results. Given the cross sectional nature of the study, we could neither discuss nor conclude causality of knowledge management, creative climate, and organizational resilience. Therefore the researchers could not claim that changes in knowledge management, and creative climate cause changes in organizational resilience. This is most suitable in longitudinal studies. Second, the sample for this study was small calling for an expanded public sector study or by comparison with the private sector.
REFERENCES


Examining the Effect of the Conflict Management Strategies on Job Performance

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The rapid globalization of modern business and the challenges to reach sales objectives pose major issues for human resource management. One important area that has yet to be fully explored is the management of conflict between sales and marketing functional areas. We hypothesize that: 1) marketing and sales task conflict is more likely to involve distributive (win–lose) issues and 2) when win–win (integrative) potential exists, the disputants are more likely to approach conflict from a fixed-pie perspective. Our analysis of data collected from food manufacturing industry supports this hypothesis. The application of different conflict management strategies varies depending on whether they are applied to sales or marketing task conflict. The importance of aligning conflict management strategies with the integrative potential of sales and marketing tasks is presented to managers.

INTRODUCTION

Conflict is a phenomenon that has existed and continues to hamper most organizations (Le Nguyen and Larimo, 2011; Bobot, 2010; Boros et al., 2010; Jehn, 1995; Kim et al., 2007). Individuals involved in organizations are consciously or unconsciously subject to conflict, and the positive and negative impact of conflict is unpreventable (Jehn, 1997). Sometimes conflict within organizations has led to disturbed routines, and decreased productivity and satisfaction (Jehn, 1995). However, through conflict, an organization has the potential to enhance its quality of decision making, creativity, and performance (Jehn, 1997; Leung and Tjosvold, 1998; Tjosvold, 1998). Since conflict has important implications for organizations and performance, it is necessary to examine the causes and effects of this important organizational variable.

Conflict management strategies (CMSs) have been described as “specific behavioral patterns that individuals prefer to employ when dealing with conflict” (Moberg, 2001, p. 47). A previous study divided CMSs into five strategies: integrating, obliging, dominating, avoiding, and compromising (Rahim, 1983). Research suggests that there is a preference for individuals to use the integrating strategy and the compromising strategy when facing conflicts (Trubisky et al., 1991; Lee, 2003). Gross and Guerrero (2000) proposed that an integrating strategy was a more effective form of conflict management strategy when compared with other CMSs. Even though integrating and compromising strategies are more likely to be used, few studies have investigated the antecedents of these CMSs (Antonioni, 1998). Among the limited research, Antonioni (1998) investigated the role of personality as an antecedent of CMSs. It was found that the role of extraversion, conscientiousness, openness, and agreeableness were important predictors of the integrating strategy.
Although previous studies have shown that the integrating and compromising strategies are preferred when people face conflicts (e.g. Lee, 2003; Trubisky et al., 1991), the direct impacts of those two styles on job performance are under-researched. Rahim et al. (2001) contended the linkage between CMSs and job performance, but this relationship has not been tested directly. Other studies discussed the positive effects of integrating and compromising styles on conflict resolutions (Hocker and Wilmot, 1998; Gross and Guerrero, 2000), but not on job performance. This may cause theoretical limitation in explaining why individuals prefer to use integrating and compromising styles when resolving conflicts, particularly its relation with job performance. This study therefore wants to close the theoretical gap and aim to identify the connection between integrating and compromising CMSs and job performance.

Despite the wide management interest, conflict between the marketing and sales functions in the food manufacturing industry has been little investigated. In addition, in food manufacturing academia, little attention is given to conflict management strategies and job performance especially in the marketing and sales organizations.

To investigate the relationship between CMSs, and job performance, data on respondents working in the sales and marketing departments in Egypt were collected. After reviewing the extant literature, it was found that previous research had not focused much on the relationship between CMSs, and job performance within the food manufacturing sector (Jordan and Troth, 2004; Rahim et al., 2001). CMSs and job performance research should be extended to the domain of sales and marketing so as to generalize research findings, even though they are different in their goals in terms of functional interest versus organizational welfare (Rainey and Chun, 2005). In addition, Denhardt (1991, p. 15) further explicates the differences between private and public organizations in terms of “ambiguity, pluralistic decision making and visibility”. Those differences may create different tensions among employees in those sectors, leading to different behaviors. This study, therefore, expects to verify whether CMSs can provide beneficial results and performance in the food manufacturing sector.

THEORETICAL FRAMEWORK AND HYPOTHESES

The Nature of Conflict

Conflict involves the interdependence of two parties and arises when the first party interferes or put barriers and obstacles in the way of the second party when he tries to achieve his tasks and objectives. There are two types of conflict: task and emotional. Task conflict focuses on systematic disagreement when achieving tasks while emotional conflict involves friction between people (Jehn, 1995). In most cases conflict is able to be resolved. In business contexts, there is no doubt that conflict exists among functional areas—specifically marketing and sales. But conflict and its consequences can be decreased when following effective conflict management strategies.

The Conflict Between Marketing and Sales Functions

While improving the company's relationship with customers is an important endeavor, looking in the mirror at relationships within the business is equally important to success. Of specific concern is the relationship between the sales and marketing organizations. It must be solid to enable the development of the external bond to prospects and customers. Yet, in most businesses, this organizational synergy has been overlooked and is fraught with problems and results in costly acquisition of accounts, ineffective marketing expenditures, and inefficient operations.

This gap in operational effectiveness originates from a lack of agreed-upon profiles for qualified leads and is exacerbated by marketing’s desire to support sales through the generation of high volume of leads. Sales representatives usually perceive the leads provided by marketing to be nothing more than mere contacts. The prospects are under qualified, unable or unwilling to buy in the short-term, are not the decision-makers in the company, while already having competing products installed. The concept fundamentally conflicts with the roles and objectives of marketing and sales, and how conflict could be handled by competent and high performing staff and managers using effective conflict management strategies.
Focusing on the working relationship between Marketing Managers and Sales Managers, Massey and Dawes (2007) examine two dimensions of interpersonal conflict: dysfunctional conflict and functional conflict. According to relevant theory, three communication variables: frequency, bi-directionality, and quality are included as antecedents in their structural model. Using these explanatory variables, they predict the two conflict dimensions, and in turn, use those three communication variables, and the two conflict dimensions to predict their ultimate endogenous variable: perceived relationship effectiveness. Their model has high explanatory power as it proved support for nine of the thirteen hypotheses. Two of the three communication variables: communication quality and bi-directionality significantly affect both forms of conflict, and relationship effectiveness. Communication frequency only positively influenced the quality of communication between the Marketing Managers and the Sales Managers. In addition, the variables in this model better predict the levels of functional conflict in the Marketing/Sales relationship than dysfunctional conflict. Finally, an important new finding is that the overall level of dysfunctional conflict between these two functional managers is relatively low, while functional conflict is high.

The researcher introduces practical techniques that can be implemented to resolve the conflict between two functions, in specific marketing and sales. It comprises of 4 stages:
1. Identifying the major duties and responsibilities of the 2 functions where conflict exists.
2. Determining the area(s) of conflict between the 2 functions.
3. Dividing up the conflict area(s) into 3 levels:
   a. Major conflict points that usually represent 50-60% of the total conflict
   b. Intermediate conflict points that usually represent 30-40% of the total conflict
   c. Minor conflict points that usually represent about 10% of the total conflict
4. Identifying the priorities to start within the implementation stage. In this stage, the focus is on the third party that will be in charge in managing or coordinating, the conflict resolution process. The third party can be either:
   a. An internal party: A selected committee, team, or unit involving well selected, trained, and highly qualified responsible people that will be in charge of resolving the conflict between the two parties that suffer from the existing conflict. To facilitate the resolution with the consideration of sensitivity to the situation, the resolution process should move through a bottom-up channel. The process starts with resolving the minor conflict points (area c), to the intermediate conflict points (area b), up to reaching the major conflict points (area a).
   b. An external party: Specialized behavioral consultants in the field of conflict resolution that are experts in penetrating the conflict areas, strongly and effectively. The conflict management resolution process usually starts with (area a): the major conflict points; or (area b): the intermediate conflict points, then the major (area a); then moving down to (area c): the minor conflict points. These consultants represent a professional neutral third party.

The Role of Human Resource Management
The responsibility for organizational success or failure is shared between the personnel function, and other enterprise functions, mainly marketing and sales. The former president of the American Management Association, once said: "Management is Personnel Administration" (Appley, 1969). His meaning, of course, was that all managers have personnel responsibilities, just as personnel directors must also be competent managers. Every manager must motivate and direct his workforce, even as every manager is responsible for the final decision in recruiting, staffing, training, and performance appraisal. Developing a personnel function is a way of providing services to line and other managers in the way of programs, policies and procedures that enable a line manager to do his job more effectively. Sometimes, of course, the help provided by personnel is in the form of expertise. Personnel policies and programs must be initiated upon the needs of various functions, then designed, implemented and supported by line managers. The success of such personnel policies and programs as in staffing and training programs should, depend on such personnel needs of line managers, mainly sales and marketing managers.
Conflict Management Strategies

Several typologies of conflict management have been developed (Rahim and Bonoma, 1979; Thomas 1976, 1979). Most of these typologies involve two dimensions based on the concern for self and for the other party’s needs. The conflict management strategies include 5 major strategies: (1) Competition (Ganesan, 1993)- sometimes described as forcing (Blake and Mouton,1964), confrontation (Thomas, 1992), win-lose (Hall, 1969), dominating (Rahim and Bonoma, 1979), or contending (Pruitt, 1983). We term this strategy “competition” suggesting that salespeople and marketing people using this approach remain steadfast, but not necessarily adversarial; (2) Accommodation (Ganesan, 1993), smoothing over (Blake and Mouton, 1964), yield losing (Hall, 1969), obliging (Rahim and Bonoma, 1979), or yielding (Pruitt,1983). This accommodation conflict management strategy attempts to satisfy the other party’s concerns, while neglecting one’s own concern in conflict situations; (3) Compromise, sufficing (Spitzberg and Canary, 1985) or sharing (Thomas, 1976) , attempts to attain moderate but not total satisfaction of parties’ concerns, giving up something but also holding out for something (Blake and Mouton, 1964; Hall, 1969; Rahim and Bonoma, 1979; Thomas, 1976); (4) Avoidance, neglects both parties concerns, conflict is not still resolved and the two parties disagree about many issues (5) Collaboration(Thomas, 1976), problem solving (Dant and Schul, 1992; Pruitt, 1983), synergistic (Hall, 1969), or integrating (Rahim and Bonoma, 1979). It involves searching for integrative, win-win resolutions of conflict that fully satisfy the concerns of the two parties in disagreement by expanding the level of joint outcomes.

THE PROPOSED INTEGRATIVE MODEL

A Conflict Management Grid is introduced, then a conceptual framework specifying the relationships between the constructs discussed. Hypotheses related to the principal contribution of this research, the effects of the conflict management strategies are outlined following the discussion of potential direct effects of the conflict management strategies and job performance levels.

Conflict Management Grid (CGM)

This research develops a Conflict Management Grid using two dimensions: Cooperation and Assertiveness. Every dimension can be measured using a 9 point scale where 9 means high, 5 means medium and 1 means low. The grid includes five strategies. This research proposes that the acquisition and the use of every strategy can be measured using the same suggested scale as follows: Avoidance (1, 1) C- A- (low cooperation and low assertiveness); Accommodation (9,1) C+A- (high cooperation and low assertiveness); Competition (1, 9) C-A+ (low cooperation and high assertiveness); Collaboration /Integration (9, 9) C+A- (high cooperation and high assertiveness); and Compromise (5, 5) C A (medium cooperation and medium assertiveness).

FIGURE 1
THE CONFLICT MANAGEMENT GRID (CMG)
Organizational behavior and human resource management scholars have different perspectives about the relationship between conflict and organizational performance. Some scholars have claimed that organizational conflict tended to hinder organizational performance and therefore should be avoided (Dyck et al., 1996; Robbins, 1991). Other scholars have viewed conflict as functional to organizations if it is managed properly (Jehn, 1995, 1997). They argue that conflict has an important role in optimizing organizational performance through developing “critical evaluation which decreases the groupthink phenomenon by increasing thoughtful consideration of criticism and alternative solutions” (Jehn, 1995, p. 260). To make conflict more productive, Jordan and Troth (2002) further suggest that the strategy used to handle interpersonal conflict is a crucial factor in successful conflict resolution. The integrating strategy of conflict management improves job performance when the solution to a conflict would benefit both parties. Both conflicting parties are encouraged to satisfy their interests through exchanging information (Meyer, 2004). Satisfaction from resolving conflicts may lead individuals to exert greater efforts in achieving performance. For example, Weider-Hatfield and Hatfield (1995) found that the integrating strategy had a strong association with job satisfaction and job performance. However, that study did not provide any clear relationship of the integrating strategy to job performance, so it lacked theoretical and empirical explanations. Rahim et al. (2001) also demonstrated that problem solving measured in terms of using more integrating strategy and less avoiding strategy, had a positive effect on the job performance.

Although very few empirical studies have presented the impact of compromising strategy on job performance, many studies have found that employees prefer to use the compromising strategy in resolving conflict (e.g. Lee, 2003; Trubisky et al., 1991). Kim et al. (2007) compared three different groups in term of conflict management strategies at the workplace and found that the compromising strategy was used often when conflicts existed between employees and supervisors. The compromising strategy may produce beneficial results due to the fact that this strategy helps conflicting people quickly find solutions and provide benefits to both sides through concessions (Hocker and Wilmot, 1998; Gross and Guerrero, 2000; Rahim, 2002). Quick and acceptable solutions resulting from using the compromising strategy may simulate individuals to exert greater effort in achieving performance. Based on those arguments, it can be proposed that both the collaboration and compromising strategies of conflict resolution will be positively related to job performance.

Thus, the following hypothesis can be posed:
H1: The organizations that have a Channel Category Sales Development (CCSD) unit whose team(s) members use effective conflict management strategies (to decrease conflict between marketing and sales functions) will positively affect job performance levels in the marketing and sales functions.

H1a: The use of the conflict management strategies: compromise and collaboration will likely be associated with high job performance level in the marketing and sales functions.

H1b: The use of the accommodation style will likely be associated with intermediate job performance level in the marketing and sales functions.

H1c: The use of the conflict management strategies: avoidance and competition will likely be associated with low job performance level in the marketing and sales functions.

METHODOLOGY

Context, Sample Selection, and Data Collection

The food manufacturing industry in Egypt compromises 59 organizations (www.mbendi.com). Both food manufacturing organizations that have and do not have a Channel Category Sales Development (CCSD) unit have been included in the study. The CCSD unit is a unit created within the organizational chart of an organization and charged with resolving conflict between marketing and sales functions.

Personal interviews were held with 30 marketing and sales managers in food manufacturing organizations that created a CCSD unit or a similar unit and those which did not create this unit. It was found that in the organizations that create a CCSD unit, the level of conflict between the marketing and sales functions is low and the CCSD succeeds in resolving conflict that in turn leads to higher performance within both functions. On the other hand, the organizations that do not have a CCSD unit, suffer from high levels of conflict between the marketing and sales functions that in turn, affects the efficiency and effectiveness of performance in both functions.

The research population chosen for the empirical research included: marketing managers, assistant brand managers, sales representatives, and Channel Category Sales Development (CCSD) unit team members in the food manufacturing industry in Egypt. Among 29 governorates (where every governorate represents a region) 10 regions were chosen for this study. Every region involves, on the average, four districts. The study focuses on 40 districts in total.

The questionnaire was modified to suit the Egyptian environment and the food manufacturing industry in Egypt. Consequently, the questionnaire modified was distributed among 50 marketing managers, assistant brand managers, sales representatives, and CCSD team members to pretest it. Data were gathered through personal interviews. The questionnaire was revised and modified again before distributing it at a large scale.

The questionnaire was distributed among 450 randomly selected sample units: 55 marketing managers, 185 assistant brand managers, 175 sales representatives, and 35 Channel Category Sales Development (CCSD) team members.

410 marketing managers, assistant brand managers, sales representatives, and Channel Category Sales Development (CCSD) team members filled in the questionnaires. 390 completely answered questionnaires are usable. The response rate is about 86%. The data collected was revised and analyzed using the SPSS statistical software package.

Concerning the sample profile, 72% are male, 73% hold a bachelor degree in Business, Marketing or IT, 24% hold an MBA degree, and 3% hold a Ph.D. degree. 60% are in their 30s, 33% are in the 20s, 83% possess 10 years of experience or less, and 17% possess 15 years of experience or more.

Measurement Instruments

A measurement instrument consisting of a multi-dimensional scale is used. Two constructs are included in this study: (1) conflict management strategies, and (2) job performance. A 5-point Likert scale was used throughout the questionnaire where 5 means strongly agree and 1 means strongly disagree.
Conflict Management Handling Strategies

A multidimensional 20-item measure developed by Whetten and Cameron (2009) was used. Conflict management strategies are consisted of five variables: competition strategy, accommodating strategy, collaboration strategy, avoidance strategy, and compromise strategy. *Competition* strategy is consisted of 4 items, *accommodation* strategy is composed of 4 items, *collaboration* strategy is composed of 4 items, *avoidance* strategy is of 4 items, and *compromise* strategy of 4 items. The Cronbach’s alfa of the conflict management strategies is (.78).

Job Performance

Job performance was measured through 8 evaluation items developed by Fried et al. (1998). It is a superior assessment scale focusing on such items as quantity and quality of work, meeting deadlines, and problem solving. A 5 point Likert scale was used where 5 means outstanding, 4 means high, 3 means satisfactory, 2 means low, and 1 means very low. The Cronbach’s alfa of the job performance is (.71).

RESULTS

**TABLE 1**

INTERCORRELATIONS AMONG SCALED VARIABLES

<table>
<thead>
<tr>
<th></th>
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<td>Conflict Management Strategies</td>
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<tr>
<td>Competition Strategy</td>
<td>.600**</td>
<td>1</td>
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<tr>
<td>Accommodation Strategy</td>
<td>.857**</td>
<td>.406*</td>
<td>1</td>
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<td></td>
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<tr>
<td>Collaboration Strategy</td>
<td>.744**</td>
<td>.189</td>
<td>.660**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidance Strategy</td>
<td>.644**</td>
<td>.043</td>
<td>.482**</td>
<td>.318</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Compromise Strategy</td>
<td>.615**</td>
<td>.056</td>
<td>.394*</td>
<td>.866**</td>
<td>.470**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>.673**</td>
<td>-.104*</td>
<td>.139*</td>
<td>.312**</td>
<td>-.199*</td>
<td>.230**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High performance</td>
<td>.639**</td>
<td>-.120*</td>
<td>.357*</td>
<td>.868**</td>
<td>-.289*</td>
<td>.810**</td>
<td>.725**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate performance</td>
<td>.471*</td>
<td>.218*</td>
<td>.712**</td>
<td>.301*</td>
<td>.422*</td>
<td>.201**</td>
<td>-.486**</td>
<td>.522**</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Low performance</td>
<td>-.383**</td>
<td>.635*</td>
<td>-.249*</td>
<td>-.364*</td>
<td>.691**</td>
<td>-.258*</td>
<td>-.655*</td>
<td>.068</td>
<td>.269**</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).
Table 1 shows the bivariate correlation among scaled variables. The correlation analysis proved a significant correlation exists between independent and dependent variables. The correlation matrix revealed high positive correlation between collaboration and compromise strategies and high performance; accommodation strategy and intermediate level of performance, and competition and avoidance strategies and low level of performance.

**TABLE 2**
**TESTING THE RELATIONSHIP BETWEEN THE COLLABORATION AND COMPROMISE STRATEGIES AND HIGH PERFORMANCE ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1.530</td>
<td>2</td>
<td>.765</td>
<td>1.011</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>21.939</td>
<td>29</td>
<td>.757</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.469</td>
<td>31</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Compromise strategy, Collaboration Strategy
b. Dependent Variable: high performance

**TABLE 3**
**TESTING THE RELATIONSHIP BETWEEN THE COLLABORATION AND COMPROMISE STRATEGIES AND HIGH PERFORMANCE COEFFICIENTS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.490</td>
<td>1.369</td>
<td>3.279</td>
<td>.185</td>
</tr>
<tr>
<td>Collaboration Strategy</td>
<td>.780</td>
<td>.080</td>
<td>.908</td>
<td>1.357</td>
</tr>
<tr>
<td>Compromise Strategy</td>
<td>.777</td>
<td>.060</td>
<td>.891</td>
<td>1.256</td>
</tr>
</tbody>
</table>

a. Dependent Variable: high performance

The analysis of variance table shows that the overall model is proven significant when the independent variables: the collaboration and compromise strategies were entered into the regression equation. The results prove support for the relationship in hypothesis 1a (Overall model: $F=1.011$, df =2, $p < 0.001$; $R^2 = .650$, adjusted $R^2 = .633$). R- Squared measures the proportion of variance in the dependent variable that is explained by changes in all of the explanatory variables. In the full model, the relationship between the conflict management strategies: collaboration and compromise and job performance, is supported in the sales and marketing functions of organizations that created a CCSD unit. Therefore, H1a is supported.

The global test assures that the independent variables do have the ability to explain the variation in the dependent variable (Lind et al., 2006). Thus, there is enough evidence that both the collaboration and compromise strategies are significantly related to, associated with and have a significant impact on job performance (see Table 3). The higher the use of the collaboration and compromise strategies the higher the cooperation and assertiveness and consequently the higher the job performance level of the marketing, sales, and CCSD unit staff members. Table 4 shows that the model is significant when an accommodation
strategy was entered into the regression equation. The results prove evidence for the relationship in hypothesis 1b (Overall model: F=1.108, df =1, p < 0.001; R² =.700, adjusted R²= .683). R- Squared measures the proportion of variance in the job performance levels that is explained by changes in all of the explanatory variables. The relationship between the conflict management strategy: accommodation and intermediate job performance, is supported in the sales and marketing functions of organizations that believe in the importance of creating a CCSD unit and who plan to create such a unit. Therefore, H1c is supported. There is enough evidence that the higher the use of the accommodation strategy in managing conflict between the marketing and sales functions, the higher the degree of cooperation. Conversely, as organizations avoid the use of the competition and /or the avoidance strategy, the degree of assertiveness is lower, and as a result an intermediate level of performance. Thus, the use of the accommodation strategy in managing conflicts is a significant predictor of the intermediate level of job performance in marketing and sales departments. The overall model is significant when the independent variables: the competition and avoidance strategies were entered into the regression equation. The results provide evidence for the relationship in hypothesis 1c (Overall model: F=2.425, df =2, p < 0.005; R² =.730, adjusted R²= .703). R- Squared measures the proportion of variance in the job performance levels that is explained by changes in all of the explanatory variables. The relationship between the conflict management strategies: competition and avoidance, and job performance is supported, in the sales and marketing functions of organizations that did not create a CCSD unit.

TABLE 4
TESTING THE RELATIONSHIP BETWEEN THE ACCOMMODATION STRATEGY AND INTERMEDIATE PERFORMANCE COEFFICIENTS

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>2.518</td>
<td>.059</td>
<td>2.899</td>
<td>.017</td>
</tr>
<tr>
<td>Accommodation Strategy</td>
<td>.380</td>
<td>.868</td>
<td>.604</td>
<td>.639</td>
</tr>
</tbody>
</table>

a. intermediate performance

Therefore, H1c is supported. The F test assures that the competition and avoidance strategies actually have the ability to explain the variation in the job performance. Thus, there is enough evidence that both the competition and avoidance strategies are significantly related to and associated with and have a significant impact on job performance. The higher the use of the competition and avoidance strategies to manage conflicts between the marketing and sales functions, the lower the degree of cooperation and/or assertiveness and consequently the lower the job performance level.

CONCLUSION

The research concludes with the following points:
- When Marketing and sales managers from food manufacturing organizations created a CCSD unit, the level of conflict between the marketing and sales functions is reduced and the CCSD succeeds in resolving conflict, that in turn leads to higher performance within both functions. On the other hand, the organizations that do not have a CCSD unit, suffer from high levels of conflict between the marketing and sales functions and consequently affect the efficiency and effectiveness of performance in both functions.
- The use of the five conflict management strategies used to resolve conflict between the marketing and sales functions have various effects according to the type of the strategy used. The type of conflict management strategies used by the marketing and sales staff influence their performance (high-medium-low).

- The positive and highly influential management strategies: collaboration and compromise, lead to higher staff performance of the marketing and sales functions. Any deficiency and/or problem in using those two strategies should be remedied immediately. The use of the collaboration strategy in conflict resolution will increase the effectiveness of both functions: marketing and sales, besides reducing the level of conflict to a great extent. The two conflict management strategies: avoidance and competition, when continually used to manage conflict between marketing and sales functions, negatively influenced the performance of both staff and functions. Using the avoidance strategy leads to more hidden conflict that will consequently influence the productivity of the staff in both the marketing and sales functions and decrease effectiveness.

- Using the accommodation strategy to manage and resolve conflict between the marketing and sales functions leads to postponing the conflict rather than resolving it. This strategy leads to a “pause” situation that, in turn, hinders an organization’s improvement and negatively influences its marketing and sales performance. Therefore, it finally leads to marketing outdate instead of update.

RECOMMENDATIONS, MANAGERIAL, AND RESEARCH IMPLICATIONS

To begin closing the gap, sales and marketing must identify and agree to the specific characteristics, attributes and profiles of highly qualified prospects. Successful marketing calls for the establishment of well-defined goals that are agreed upon by both sales and marketing and make a significant contribution to the organization success.

For the organizations that possess a CCSD unit should keep recruiting and selecting highly competent and qualified human resources at all levels, managerial, supervisory, and implementation. On the other hand, for the organizations that do not possess a CCSD unit, immediate creation of this unit is crucial and staffing it with highly qualified, competent, and well trained human resource is essential. Training and coaching programs can enhance and improve the use and application of conflict management strategies by staff, supervisors and managers. Financial and non-financial rewards can motivate both functions personnel.

To lessen the degree of functional conflict, effective human resource management strategies, activities, and practices such as human resource planning, recruitment, effective selection (tests and interviews) for new staff and assessment centers for managers to be hired at the CCSD unit. The human resource department should continually design; administer self assessment performance appraisal, and training and development needs assessment, and incentive schemes. The proposed conflict resolution grid is useful in recruiting, selecting, hiring, training and appraising performance of managers, supervisors, and staff in marketing and sales.

Sales managers should work on the reduction of conflict as it will help improve the relationship between sales and marketing functions and consequently, sales are expected to reach their target levels if not higher. Sales managers can use the proposed matrix in hiring, appraising and improving the performance of their staff, and in training and developing their sales force. It explains how effective conflict strategies as compromise and collaboration conflict strategies work and help achieving targets effectively and how ineffective conflict strategies such as avoidance or competition don't work. In other words, if a sales manager is to implement a conflict reduction strategy, he or she could recommend a self assessment form every staff member determining what strategy (ies) he or she uses in most cases on the proposed matrix, and the design a performance improvement plan together. A joint meeting of marketing and sales staff can take place. Joint training is useful. In addition, future salary increases should be tied to sales and marketing working together. If a manager refuses to work with another function, a third party
like an internal committee or an external party like an outside consultant can help in solving this dilemma. At the end, if after professional intervention, he still refuses he should be replaced.

SUGGESTIONS FOR FUTURE RESEARCH

The problem of conflict between marketing and sales functions should be studied through a longitudinal survey. Further study could also measure employee and staff attitudes in the CCSD units toward the conflict management strategies, techniques, and processes used to resolve conflict between the marketing and sales functions using the conflict management resolution matrix. Research should be expanded to other industries, product or service organizations to increase the generalizability of the findings.

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Balancing Security and Efficiency in Limited-Size Computer Adaptive Test Libraries

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The majority of studies focusing on enhancing item bank security and measurement efficiency in computer adaptive tests (CATs) have featured large item banks consisting of thousands of items. For many practitioners of high-stakes tests, CATs are a viable alternative to static forms, but inadequate resources exist for developing expansive item libraries. Practitioners may need to consider alternative solutions for maintaining CAT integrity and proficiency. This study documents the effects of changing the size of minimum eligible item pools for selection on test length, maximum exposure frequency, and total item usage across four operational item banks of various size and quality.

INTRODUCTION

In the near future, the Navy Medicine Operational Training Center will make available variable length Computer Adaptive Test (CAT) versions of the Aviation Selection Test Battery (ASTB), the primary cognitive screening tool used to select student aviators and flight officers for the United States Navy, Marine Corps, and Coast Guard. The ASTB consists of the Math Skills Test (MST), Reading Comprehension Test (RCT), Mechanical Comprehension Test (MCT), and Aviation and Nautical Information Test (ANIT). In its current format, the ASTB consists of three static parallel forms. Each subtest is scored on a -4.0 to +4.0 metric using expected a posteriori (EAP) theta estimation in an item response theory framework (Phillips, 2004). The ASTB is administered to approximately 10,000 live aviation and officer applicants yearly (Moclaire, Middleton, & Phillips, 2011). The current study utilizes a methodology of selecting least-exposed eligible items based on Bayesian information calculated from
three parameter logistics model (3PL) item parameters at the examinee’s current estimated theta (ability) level using Owen’s (1975) procedure. This paper focuses primarily on how the manipulation of the minimum number of items required in the CAT ASTB subtests’ eligible item selection pools affected test length and exposure frequency using 10,000 computer simulations per subtest.

Three of the biggest obstacles to overcome before CAT ASTBs can be administered operationally include: maintaining maximal measurement accuracy and efficiency, maintaining the security of item banks for each subtest by limiting overall item exposure, and ensuring balanced coverage of content subdomains between examinees within each test. These necessities can conflict with one another. For example, the items that are the most diagnostically valuable for assessing examinees at any given ability level, based on the item parameters (i.e., ‘a,’ or information, ‘b,’ or difficulty, and ‘c,’ or guessability), may be presented to nearly every examinee of a similar ability level (Parshall, Davey, & Nearing, 1998). This will lead to overexposure of items and may potentially compromise the test banks unless exposure controls are assigned to a CAT’s item selection algorithm, which in turn has the possibility of jeopardizing the efficiency of measurement. In essence, prior studies have demonstrated a trade-off where measurement precision comes at the expense of reduced item exposure control (e.g., Way, 1998).

Several researchers have explored alternative methods of controlling item exposure frequency while simultaneously yielding accuracy in assessments, but no methodology has been without a unique set of shortcomings. Studies conducted by Revuelta and Ponsoda (1998) as well as van der Linden and Veldkamp (2004) have been successful at restricting overexposure for the most frequently exposed items within CAT libraries, but little attention was paid to increasing the exposure of the most underused items. Building and implementing extensive CAT item libraries is a time and cost intensive process, so underutilizing or simply not utilizing items that still provide valuable information for assessing examinees may be viewed as suboptimal use of resources. In addition, as Barrada, Veldkamp, and Olea (2008) emphasized, certain item selection techniques can lead to a reduction in item quality as the CAT progresses (e.g., administering only the most informative items without an element of randomization will lead to the availability of fewer maximally informative items toward the test’s end). Recent studies have focused on limiting item exposures at certain difficulty ranges, targeting items with ‘b’ parameters near the test cut score (Li, Becker, & Gorham, 2009). The ASTB subtests do not have individual cut scores, as selection decisions are made based on composite scores yielded from weighted combinations of all subtests.

The aforementioned studies featured simulated and/or operational item banks that are much larger than those available for the ASTB subtests. Alternative solutions for operationally implementing CAT tests featuring item banks consisting of fewer than 400 items have not been thoroughly explored in existing literature. The comparative lack of depth in the ASTB subtest item banks limits the options available for successful CAT implementation while simultaneously placing the best items within the item banks at an elevated risk of overexposure. However, CATs may still be a viable option, even when organizational resources are limited. As a means of assessing potential item selection algorithm settings for the MST, RCT, MCT, and ANIT, four simulated scenarios involving manipulation of the minimum number of items in the eligible item pool were enacted in an attempt to yield the most pragmatic, functional combination of:

- Low exposure frequencies for the most-exposed items within each operational subtest bank.
- As many items as possible from each subtest being exposed at least one time.
- A low total number of items administered per subtest due to exams reaching the standard error of measurement (SEM) threshold.
- As few full-length, 30-item tests as possible failing to reach the SEM threshold. The current static forms range from 27 items (RCT) to 30 items (all other subtests).

**Method**

3PL parameters had previously been estimated on all items for the four subtests. Table 1 presents the number of items and content areas per subtest, the maximum and minimum number of items contained
within any given subtest content area, and the distribution characteristics of the ‘a,’ ‘b,’ and ‘c’ parameters. Each subtest varies in total items and content areas. The MST has the deepest and most robust item bank, with the most items overall and the mean item providing more information than the other three subtests, as indicated by the elevated mean ‘a’ parameter. The RCT has the smallest item bank, and the average item yields less information than the average MST or ANIT item. The mean MCT item is more difficult than the mean item from the other three subtests, as indicated by the elevated mean ‘b’ parameter.

### TABLE 1
ASTB ITEM, CONTENT AREA, AND PARAMETER CHARACTERISTICS

<table>
<thead>
<tr>
<th>Subtest</th>
<th>N Items</th>
<th>N Content Areas</th>
<th>M 'a'</th>
<th>SD 'a'</th>
<th>M 'b'</th>
<th>SD 'b'</th>
<th>M 'c'</th>
<th>SD 'c'</th>
</tr>
</thead>
<tbody>
<tr>
<td>MST</td>
<td>394</td>
<td>8</td>
<td>0.99</td>
<td>0.32</td>
<td>0.05</td>
<td>1.08</td>
<td>0.24</td>
<td>0.06</td>
</tr>
<tr>
<td>RCT</td>
<td>220</td>
<td>5</td>
<td>0.79</td>
<td>0.27</td>
<td>-0.04</td>
<td>1.27</td>
<td>0.25</td>
<td>0.08</td>
</tr>
<tr>
<td>MCT</td>
<td>328</td>
<td>10</td>
<td>0.79</td>
<td>0.33</td>
<td>0.16</td>
<td>1.26</td>
<td>0.26</td>
<td>0.08</td>
</tr>
<tr>
<td>ANIT</td>
<td>255</td>
<td>5</td>
<td>0.85</td>
<td>0.37</td>
<td>0.06</td>
<td>1.31</td>
<td>0.25</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note. A ‘c,’ or pseudo-guessing parameter value of 0.25 for a given item would indicate that there would be 25% chance that the examinee could guess the correct answer response without knowing the answer.

10,000 simulated examinees were randomly assigned a uniformly distributed theta value for all four subtests ranging from -4.0 to +4.0 ($M = 0.07, SD = 1.94$). A pseudo-random number was drawn from a uniform distribution of numbers ranging from 0.0 to 1.0 to simulate the examinees’ responses for each item. If the random number was less than the probability of a correct response for the item based on the item’s 3PL parameters at the examinee’s current estimated theta quadrature node, the item was scored as correct. A detailed explanation of this process may be found in Sympson and Hetter (1985). Quadrature nodes were divided evenly into 81 bins at the tenth of a decimal place, ranging from -4.0 to +4.0.

**Establishing the SEM Stopping Threshold for Present Study**

Prior to examining the effect of manipulating the minimum item selection pool, exam termination rules were evaluated based on the ability to accurately estimate simulated thetas. A SEM threshold for test stopping was established by running 10,000 simulations per test at the SEM threshold cut-off levels of 0.40, 0.35, 0.30 for the MCT and RCT. All simulations were run with a minimum eligible item pool of three items for theta SEM cut-off calibration. When the SEM threshold cut-off levels were set at 0.40, examinees’ mean absolute simulated theta fluctuated by nearly a full theta point ($M = 0.92$, $SD = 0.67$ on MCT, $M = 1.02$, $SD = 0.69$ on RCT) when examining the absolute value of change on both subtests. Considering that the operational static tests under investigation have theta standard deviations ranging from 0.69 on the RCT to 0.81 on the MST (Moclaire et. al, 2011), the potential impact on selection decisions would be unacceptable if this SEM were utilized. Using a SEM of 0.35 for the CAT stopping criteria, the observed mean absolute value of the theta change was appreciably improved ($M = 0.28$, $SD = 0.22$ for MCT, $M = 0.28$, $SD = 0.22$ for RCT) for both subtests. Using 0.30 as the CAT stopping criteria, the observed mean absolute value of the change was 0.25, with standard deviations of 0.20, for both subtests. The 0.30 SEM stopping criteria only provided a marginal improvement in comparison to the 0.35 scenario. With a priority given to reduction of item exposure frequencies and test administration time, all further simulations were conducted using 0.35 as the SEM for CAT stopping, as these scenarios led to approximately two fewer questions being administered to each examinee per subtest with little loss in measurement precision efficiency. Mean SEM on the current static ASTB forms range from 0.34 on the MST to 0.37 on the RCT.
CAT Specifications and Procedures for Present Study

Item selection was partially based on variations of the 4-3-2-1 procedure originally developed by McBride and Martin (1983). In their procedure, not only is the most informative item identified, but also the second, third, and fourth most informative items. The most informative item will be exposed to 40% of the examinees, with the second, third, and fourth best items presented 30%, 20%, and 10% of the time, respectively. Though this provides a reasonable alternative for somewhat limiting item exposure of the best items, given the risk associated with over exposing items it is important to further minimize the exposure rates of the most-informative items, using item eligibility methods similar to those established by van der Linden and Veldkamp (2007). Their item-eligibility method uses a top-down approach in which exposure control is achieved by limiting the percentage of examinees for whom a given item is eligible to be exposed (e.g., no item may be administered to more than 15% of examinees). This solution would be very beneficial for tests consisting of larger item banks. The present study used a bottom-up approach, in which a minimum number of suitable items were identified for a given examinee, and exposure control was achieved by randomly selecting from the least-exposed of these eligible items. This seemed to be a wiser approach to limiting maximum exposure frequencies when item banks are relatively small. The minimum number of items in the pool of eligible items was manipulated in each of the four simulation scenarios. The minimum eligible item pools for each simulation consisted of three, four, five, or six items.

In all scenarios, the simulation completed the following steps during the process of selecting and delivering an item. First, a content area within the subtest that contains multiple items that provide maximum information near the theta quadrature of 0.0 is randomly selected. Within this content area, the items presenting the most information at a theta quadrature of 0.0 (the examinee’s estimated ability before having answered any questions) are identified. The number of initial items varies from three to six, depending on the simulation scenario. A randomly selected question from this group of eligible questions is delivered to the simulated examinee. A correct or incorrect response is recorded, based on Simpson and Hetter’s (1985) aforementioned probability model, and the examinee’s theta is recalculated based on a correct or incorrect response and the parameters of the item.

After the first question on a given subtest is selected, the process for selecting all remaining items is slightly altered. A new content area, always different from the last content area used within the subtest, is then randomly selected. Items from the same content area will never be administered back-to-back as a means of assuring adequate content coverage and balance. The item from this content area that provides the most information at the examinee’s current estimated quadrature node is identified, then, all items that provide at least 75% as much information as this item are also placed into the eligible item selection pool, regardless of the size of the minimum eligible item pool. If there are not yet enough items to minimally populate the pool, the standard of 75% information value is reduced in increments of 10% until an adequate amount of items are made available in the eligible item pool. The size of the minimum eligible item selection pool was manipulated in these simulations. Next, the item from this eligible pool with the minimum exposure frequency is identified. All items with 1.1x or fewer exposures than this minimally exposed item remain eligible (e.g., if the minimally exposed items had 50 exposures, all items with 55 or fewer exposures would still be eligible for delivery to the examinee). If no other items fit this criterion, the minimally-exposed item is delivered. If more than one item is still eligible, one is randomly selected to be delivered to the examinee. These steps repeat until the SEM threshold of 0.35 is reached, so long as at least 15 questions or more were answered. If the SEM threshold is not reached, a maximum number of 30 questions will be administered on the given subtest.

RESULTS

Table 2 highlights characteristics of the exposure frequencies and test length characteristics observed, based on 10,000 simulations per subtest scenario. As a general rule, increasing the size of the minimum eligible item pool by one item increased the average test length by approximately one half of an item.
Similarly, the number of minimum-length tests decreased and the number of maximum-length tests increased as the minimum eligible item pool expanded.

**TABLE 2
ASTB ITEM EXPOSURE FREQUENCIES AND TEST LENGTH CHARACTERISTICS**

<table>
<thead>
<tr>
<th></th>
<th>N Items</th>
<th>M EF</th>
<th>Med. EF</th>
<th>Max EF</th>
<th>N 0 EF Items</th>
<th>M ID</th>
<th>SD ID</th>
<th>Med. ID</th>
<th>N 30 IT</th>
<th>N 15 IT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min. 3 IP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST</td>
<td>394</td>
<td>469.7</td>
<td>58</td>
<td>3862</td>
<td>115 (29.2%)</td>
<td>17.5</td>
<td>3.8</td>
<td>16</td>
<td>386</td>
<td>4488</td>
</tr>
<tr>
<td>RCT</td>
<td>220</td>
<td>1028.1</td>
<td>284</td>
<td>6545</td>
<td>25 (11.4%)</td>
<td>21.6</td>
<td>4.1</td>
<td>21</td>
<td>965</td>
<td>96</td>
</tr>
<tr>
<td>MCT</td>
<td>328</td>
<td>713.9</td>
<td>203</td>
<td>3926</td>
<td>56 (17.1%)</td>
<td>22.4</td>
<td>5.1</td>
<td>22</td>
<td>1564</td>
<td>1030</td>
</tr>
<tr>
<td>ANI</td>
<td>255</td>
<td>770.0</td>
<td>164</td>
<td>5192</td>
<td>47 (18.4%)</td>
<td>18.6</td>
<td>4.2</td>
<td>17</td>
<td>478</td>
<td>3098</td>
</tr>
<tr>
<td><strong>Min. 4 IP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST</td>
<td>394</td>
<td>482.0</td>
<td>99</td>
<td>3513</td>
<td>96 (24.4%)</td>
<td>18.0</td>
<td>4.0</td>
<td>16</td>
<td>473</td>
<td>3761</td>
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<tr>
<td>RCT</td>
<td>220</td>
<td>1066.8</td>
<td>406</td>
<td>5796</td>
<td>14 (6.4%)</td>
<td>22.5</td>
<td>4.1</td>
<td>22</td>
<td>1184</td>
<td>49</td>
</tr>
<tr>
<td>MCT</td>
<td>328</td>
<td>742.0</td>
<td>333.5</td>
<td>3423</td>
<td>41 (12.5%)</td>
<td>23.3</td>
<td>5.0</td>
<td>23</td>
<td>2065</td>
<td>496</td>
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<tr>
<td>ANI</td>
<td>255</td>
<td>792.8</td>
<td>244</td>
<td>4564</td>
<td>39 (15.3%)</td>
<td>19.2</td>
<td>4.4</td>
<td>18</td>
<td>589</td>
<td>2478</td>
</tr>
<tr>
<td><strong>Min. 5 IP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST</td>
<td>394</td>
<td>493.4</td>
<td>161.5</td>
<td>2899</td>
<td>85 (21.6%)</td>
<td>18.4</td>
<td>4.1</td>
<td>17</td>
<td>537</td>
<td>3091</td>
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<tr>
<td>RCT</td>
<td>220</td>
<td>1103.1</td>
<td>509.5</td>
<td>5484</td>
<td>6 (2.7%)</td>
<td>23.3</td>
<td>4.0</td>
<td>22</td>
<td>1519</td>
<td>13</td>
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<tr>
<td>MCT</td>
<td>328</td>
<td>770.7</td>
<td>399</td>
<td>3158</td>
<td>25 (7.6%)</td>
<td>24.3</td>
<td>4.7</td>
<td>24</td>
<td>2477</td>
<td>250</td>
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<tr>
<td>ANI</td>
<td>255</td>
<td>811.5</td>
<td>297</td>
<td>4268</td>
<td>29 (11.4%)</td>
<td>19.7</td>
<td>4.5</td>
<td>19</td>
<td>713</td>
<td>2068</td>
</tr>
<tr>
<td><strong>Min. 6 IP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MST</td>
<td>394</td>
<td>499.8</td>
<td>200</td>
<td>2755</td>
<td>77 (19.5%)</td>
<td>18.6</td>
<td>4.2</td>
<td>17</td>
<td>556</td>
<td>2723</td>
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<tr>
<td>RCT</td>
<td>220</td>
<td>1114.7</td>
<td>565</td>
<td>5152</td>
<td>5 (2.2%)</td>
<td>23.5</td>
<td>4.0</td>
<td>23</td>
<td>1613</td>
<td>16</td>
</tr>
<tr>
<td>MCT</td>
<td>328</td>
<td>783.8</td>
<td>455</td>
<td>2813</td>
<td>13 (4.0%)</td>
<td>24.7</td>
<td>4.6</td>
<td>25</td>
<td>2735</td>
<td>174</td>
</tr>
<tr>
<td>ANI</td>
<td>255</td>
<td>832.4</td>
<td>356</td>
<td>4195</td>
<td>23 (9.0%)</td>
<td>20.2</td>
<td>4.6</td>
<td>19</td>
<td>814</td>
<td>1675</td>
</tr>
</tbody>
</table>

Note: IP = Item Pool. EF = Exposure Frequency. ID = Items delivered per test. IT = Item tests. Med. = Median. Based on 10,000 simulations per subtest and scenario.

Median exposure frequencies more than doubled as the minimum eligible item pool expanded from three to six items, while mean exposure frequencies increased only slightly. This, along with the decrease in unexposed items, provides evidence that the exposure frequencies for the most-exposed items were reduced, and more underutilized items were being selected as the minimum eligible item pools expanded.

Results also indicated the overall quality of items within any given subtest item bank influenced the length of the tests. For example, on the MST which has the highest mean (0.99) ‘a’ or information parameter and a larger item bank overall, test length ranged from 17.51 items with a minimum eligible item pool or 3 to 18.61 items with a minimum eligible item pool of 6. The MCT, which has a mean ‘a’ parameter of 0.79, had test lengths which grew from 22.42 to 24.68 items as the minimum eligible item pool increased. This indicates that more robust subtests are more resistant to decrements in measurement efficiency as the minimum eligible item pool expands.

**DISCUSSION, LIMITATIONS, AND FUTURE DIRECTION**

The present study confirms Way’s (1998) assessment of the paradox of CATs: measurement efficiency will come at the cost of exposure control. By loosening the restrictions on exposure control, the most-used items were exposed less and more items were used overall, however the mean increase in test length by 1.10 items on the MST to 2.26 items on the MCT when comparing the three minimum item.
pool scenario to the six minimum item pool scenario. Still, even where the minimum eligible item selection pools were the largest, all mean subtests lengths are much shorter than the current static forms.

Previous CAT research has typically utilized item banks consisting of thousands of items, whereas the operational ASTB CATs only have several hundred items available per subtest. Accordingly, there have been more options available as to how to best limit item exposure (e.g., rotating sub-banks within each master test bank) for other researchers and practitioners. However, even with limited options, all CAT simulation scenarios presented in this research still yielded improvements over the current static forms. For example, if each of the three 30-item per subtest static forms were administered an equal number of times, we would see 3,333 exposures per item for every item. In the simulation featuring a minimum eligible item pool of five items, there were only 23 RCT and 9 ANI items that were exposed this many times or more. Proportionally, only a very small portion of the items would be administered to as many examinees as all items are on the static forms currently are. In addition, there were not any MST or MCT items for which such a high exposure frequency rate was observed. Even though a handful of items were administered to several thousand simulated examinees, many items had desirable exposure rates, where roughly one-third of the items within each of the given subtest item banks were exposed to between 1% and 10% of examinees.

Though not covered in the Results section of this research, the initial SEM calibration presented in the Methods suggests that practitioners should carefully evaluate theta recovery before deciding on SEM for stopping thresholds. If the results observed in this study generalize, there may be an optimal point at which adequate theta recovery can be obtained without sacrificing reduced test length, though not setting the SEM criteria for test termination at a low enough level can lead to unreliable tests with poor predictive value, and hence, yield poor selection decisions. Practitioners utilizing fixed-length CATs should also consider these implications, and may want to consider lengthening tests should theta recovery be low.

A potential limitation to this item selection algorithm is that random selection of item content areas does not assure uniform content representation across examinees, which may call into question test fairness. When parameter estimates were obtained for the items within each test’s item bank, the items were administered on forms consisting of multiple items from all content areas. Any items not fitting the 3PL model, either in terms of low bi-serial correlation or poor model-data fit, for the subtest construct of interest during parameter estimation in BILOG-MG 3 (du Toit, 2003) were removed from further analyses and not included in the CAT item banks. Though items may come from various content areas, the tests as a whole are acceptably unidimensional (Stark, Chernyshenko, Choah, Lee, & Waddington, 2008). Given the relatively limited amount of content areas per subtest, never administering items from the same content area consecutively will ensure that in the majority of cases, examinee test should be comparable in terms of content representation. Though unlikely, the potential for extreme cases exists (e.g., alternating between only two content codes for the duration of an entire test). A potential alternative would be to dictate the order in which content areas would appear on a given test, but this would come at the expense of risking more overlap between any two given tests, particularly at the beginning of tests, when all examinees will have similar estimations of theta.

Several additional features have also been built into the capabilities of the CAT item selection algorithm to further limit items from becoming over-exposed and to enhance test security. For instance, items can be temporarily suspended, or even removed outright from the operational test bank. Several of the MST content areas feature upwards of 100 items, leading to many items that have relatively high information values across the ability continuum to never emerge in the eligible item pools. For several of these content areas, items with the highest exposure frequencies can be temporarily “turned off,” which will have the effect of rotating under-exposed and non-exposed items into the eligible item selection pool.

Operationally, it may be beneficial to implement slightly different scenario specifications for each subtest. Based on the observed results, it may be most beneficial to utilize larger (e.g., five item) minimum item selection pools for all scenarios. This will only slightly increase the length of the average test for all subtests, but will make noticeable improvements on all tests in terms of number of items being utilized and keeping the highest exposure frequencies manageable. However, where item banks are large and contain more informative items (i.e., MST), it may be beneficial to regularly rotate out items from the
largest content areas as a means of giving more items the potential to be utilized on the test, or perhaps even make the minimum eligible item pool even larger for content areas with many items. This likely would not increase the length of the average test in a noticeable way. However, where item banks are generally small and contain fewer informative items (i.e., RCT), regularly rotating out the most informative/most exposed items would likely lead to long test lengths, as any given content area may not contain highly informative items across ability levels. With nearly all test items already being utilized, there would be little gain from adopting this strategy.

**Follow Up Study with Live Examinees**

The CAT ASTB subtests were administered to 305 aviation students using a 5-item minimum eligible-item selection pool. Table 3 displays descriptive characteristics of exam lengths and exposure frequencies in comparison to those observed for the simulated sample previously described. Where appropriate, data from the 305 live cases have scaled to estimate what the expected values for 10,000 cases would be (e.g., exposure frequencies).

**TABLE 3**

<table>
<thead>
<tr>
<th></th>
<th>N 0 EF Items</th>
<th>M</th>
<th>SD</th>
<th>Med.</th>
<th>IT</th>
<th>N Max</th>
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<tbody>
<tr>
<td>MST Sim.</td>
<td>394</td>
<td>113 (28.7%)</td>
<td>16.6</td>
<td>3.5</td>
<td>16</td>
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<td>MST Live</td>
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<td>18.4</td>
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<td>3091</td>
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<td>6 (2.7%)</td>
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<td>4.0</td>
<td>22</td>
<td>1519</td>
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<td>RCT Live</td>
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<td>35 (15.9%)</td>
<td>19.9</td>
<td>0.5</td>
<td>20</td>
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<td>MCT Sim.</td>
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<td>25 (7.6%)</td>
<td>24.3</td>
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Note: EF = Exposure Frequencies. ID = Items delivered per test. IT = Item tests. Med. = Median. A 5-item minimum-eligible item pool was utilized for both the simulated and live sample. Where applicable, the values for the 305 live examinee sample have been adjusted to a sample of 10,000 examinees, assuming that the results from this sample extrapolate perfectly. These values were calculated for the mean exposure frequency, median exposure frequency, max exposure frequency, maximum item tests, and minimum item tests variables. Time expired on 136 of 305 MST before they had been completed. The mean number of questions answered would be higher otherwise. The MST time limit has since been expanded for operational use. The maximum number of RCT items delivered was set to 20 for the live sample, leading to fewer items delivered overall and a high observed frequency of maximum-length tests. All other subtests were set to a maximum of 30 items.

These findings hold promise for the viability of the CAT ASTB operationally. Some of highlights of this study include:
- Results closely mirrored those observed in the simulation studies. Mean items delivered on the MCT and ANIT were almost identical for the live and simulated examinees.
- The average item was presented to less than 9% of examinees on all 4 subtests.
- The most frequently exposed items were presented to a smaller proportion of live examinees than simulated examinees (e.g., the most-exposed ANIT item was presented to 22.6% of live examinees and 42.3% of simulated examinees).
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CONCLUSION

Previous CAT research has focused on simulated and operational CAT tests featuring extensive item libraries. In practice, many organizations that regularly test could benefit from implementing CAT tests, but do not have the resources available or a true need to develop an item library consisting of thousands of items per subtest. The method examined herein, where item exposure is limited for the most-exposed items by presenting examinees with the least-exposed item that still yields high levels of information at their current estimated ability level, sacrifices little in the way of efficiency for reaching a desirable level of measurement accuracy. There are small trade-offs in efficiency between obtaining desired measurement accuracy and overexposing the most-exposed items. Practitioners are advised to consider the characteristics of their item libraries when deciding on the size of a minimum eligible item pool before finalizing the specifications of CAT algorithms.

Results yielded from all four simulated CAT scenarios of ASTB subtests would greatly reduce item exposure while simultaneously maintaining the statistical precision necessary for high-stakes selection testing when compared to the current static versions of the test. Additionally, with the majority of examinees answering fewer questions than they would on a static test, we expect to see a reduction in average exam administration time, saving the money and time associated with proctoring the ASTB. An initial study on live examinees yielded results comparable to those found in the simulations, holding great promise for the operational implementation of the CAT ASTB subtests.

REFERENCES


