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North American Business Press
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West Palm Beach, Florida 33401
jop@na-businesspress.com
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The Bases of Power Revisited: An Interpersonal Perceptions Perspective

R. Anthony Turner
University of British Columbia

Kira F. Schabram
University of British Columbia

Although power is fundamental to interpersonal processes, relatively little research has focused on the interpersonal aspects of power within organizations. In this article, we review one of the predominant typologies in social power research, French and Raven’s (1959) Bases of Social Power. We extend that typology by considering how power utilization attempts and outcomes associated with each basis of power is likely impacted by the interpersonal perceptions and meta-perceptions of those who hold (or perceive themselves to hold) power.

INTRODUCTION

Power is central to interpersonal and group processes and is foundational in the study of organizations (e.g., Bernard, 1938; Festinger, 1953; Lewin, 1947; Sherif, 1936; Weber, 1947). Although there are many conceptualizations of power, one of the most ubiquitous is the typology of social influence advanced by French and Raven (1959). Within those authors’ “Bases of Social Power” framework, power is inherent to social exchange; it is both a product and shaper of social interaction. Despite the inherently interpersonal nature of social power and the key role it plays in organizational psychology (Raven, Schwarzwald, & Koslowsky, 1998), however, research focusing on the interpersonal aspects of power within organizations is largely lacking. Moreover, we argue that interpersonal perceptions and the accuracy of those perceptions likely play vital roles within interpersonal power dynamics but heretofore have received little research attention.

Interpersonal perceptions and the accuracy of those perceptions should be considered within interpersonal power dynamics because until, or unless, someone attempts to exercise power, power (or lack thereof) resides only in people’s minds. For example, a person might perceive that others view him or her as holding power over them and, as a result of that perception (but independent of its accuracy), judge him- or herself to be powerful. In reality, however, the true perceptions of others are not readily knowable and must often be inferred (Kenny & DePaulo, 1993). Generally people are not adept at making inferences about the views that others hold of them (e.g., DePaulo, Kenny, Hoover, Webb, & Oliver, 1987); as such, the perceptions they believe others have of them typically correspond little with reality (Kenny & DePaulo, 1993). Thus, although a person might perceive him- or herself as holding power, that “power” might exist only in his or her own mind.

Although social perceptions might create one’s reality (Snyder, 1984), the perceptions upon which that “reality” is based are often quite inaccurate (Jussim, 1991). The current research seeks to build from...
that assumption to enhance the utility of French and Raven’s conceptualization of social power for explaining interpersonal power dynamics within organizations. In pursuit of that goal, we reexamine each of the bases of power through the lens of interpersonal perception and interpersonal perception accuracy, augmenting the social power bases framework with insights from the interpersonal perceptions, meta-perceptions, and meta-accuracy literatures.

META-PERCEPTIONS AND META-ACCURACY

We define a meta-perception as a person’s construal of the perception(s) that one or more others hold regarding that person (Turner & Robinson, 2011; c.f., Albright, Forest, & Reiseter, 2001; Kenny & DePaulo, 1993; Vorauer & Miller, 1997). The explicit study of the meta-perception process (Laing, Phillipson, & Lee, 1966) focuses on how individuals form perceptions or beliefs about how they are viewed by others, either as individuals (Frey & Tropp, 2006) or as representatives of their social categories (Méndez, Gómez, & Tropp, 2007; Vorauer, Main, & O’Connell, 1998). Because people generally are concerned with the views others hold of them, meta-perceptions matter.

Meta-perceptions are believed to motivate interpersonal actions and guide social interactions (e.g., Albright, et al, 2001). A growing body of literature, predominantly within the social psychology research domain but increasingly in other areas of research, suggests that the meta-perceptions matter. The perceptions that people believe that others have of them in relation personal factors such as likeableness, sexuality, prejudice, attractiveness, competence, and skill (Kenny, Albright, Malloy, & Kashy, 1994; Malloy, Kenny, Albright, Agatstein, & Winquist, 1997; Levesque, 1997; Swim, Johnston, & Pearson, 2009; Vorauer, Main, & O’Connell, 1998; Anderson et al, 2008) exert important influences on people’s behaviors. So, too, do meta-perceptions relating to interpersonal attributes such as leadership, status, and fame (Malloy & Janowski, 1992; DePaulo et al., 1987).

To form accurate meta-perceptions is to know the mind of others, and knowing the mind of others is difficult: Meta-accuracy, which we define as the degree to which meta-perceptions correspond with the actual perceptions with which they are coupled (Turner & Robinson, 2011), is typically quite low (Kenny, Albright, Malloy, & Kashy, 1994). Meta-accuracy can be hampered both by individual attributes such as narcissism (Oltmanns, Gleason, Klonsky, & Turkheimer, 2005) or need for social approval (Crowne & Marlowe, 1964) and by external factors such as the hesitancy of others to convey evaluative information (e.g., Felson, 1980; Swann & Gill, 1997) or others’ attempts at manipulation, revenge, or even kindness (Anderson et al., 2008; Kenny & DePaulo, 1993; Oltmanns et al., 2005).

FRENCH AND RAVEN’S TYPOLOGY REVISITED

According to French and Raven’s foundational work, there are six fundamental types or bases of power in social contexts. Each type of power—reward, coercive, legitimate, expert, referent, and informational—represents a different underlying source of motivation for its target. For two of the power bases, motivation arises essentially from quid-pro-quo transactions in which behaviors are exchanged for rewards or punishments. For the others, motivation arises from social influence and/or social exchange.

Reward Power and Coercive Power

The most rudimentary types of power are reward power and coercive power, which are enacted through transactional exchanges. When exercising these power bases, the holder of power (H) observes the behaviors of the target (T). H gives rewards or removes punishments to the extent that T behaves as desired and administers punishments or withholds rewards to the extent that T fails to behave as desired.

Reward power depends on ability of the H to administer positive valences or to decrease negative valences—to give rewards or remove punishments. The range of rewards as a basis of power is limited to those regions of behavior for the T in which H can legitimately offer rewards. For instance, T’s supervisor might be able to offer a salary increase for exceptional work performance, but offering the same reward
for voting for a specific candidate in a presidential election would not be legitimate. The latter case would result in a diminishment in $H$’s future reward power.

Coercive power is based on $H$’s ability to punish $T$ for failure to conform to $H$’s wishes. Whereas reward power can eventually persist without continued rewards, coercive power remains contingent on $H$’s ability to punish $T$. The strength of coercive power depends on the valence of the threatened punishment—how much suffering it will inflict on $T$—and the probability that $T$ can avoid the punishment by conforming. It also depends on the degree to which $H$ can monitor $T$. Coercive power exerts force on $T$ to vacate the shared space, which requires $H$ to introduce restraining forces to prevent this from occurring.

Reward and coercive power bases rely on a belief by $H$ about whether or not $T$ perceives $H$ as both able and willing to reward [punish] $T$’s conformity [nonconformity]. This meta-perception should determine the extent to which $H$ is willing to attempt to leverage a reward [punishment] as a basis of power. If $H$ perceives that $T$ does not believe that $H$ is willing and able to deliver the reward [punishment] whereas $T$ actually does believe that $H$ is willing and able to deliver, $H$ will underestimate his or her ability to affect $T$’s behavior. Conversely, if $H$ overestimates the extent to which $T$ believes that $H$ is willing and able to deliver, attempts to exercise that power basis might not yield expected or desired results.

Furthermore, the accuracy of $H$’s perception of the extent to which $T$ values [wishes to avoid] a potential reward [punishment] is likely to affect the capacity of the reward [punishment] to influence $T$’s behavior. If $H$ has high accuracy concerning $T$’s like [dislike] of the reward [punishment] such that $H$ correctly believes that $T$ will rigorously seek [seek to avoid] the reward [punishment], then $T$ will be motivated to the extent $T$ perceives $H$ as having both the ability and willingness to reward [punish] $T$’s conformity [nonconformity], and to the extent that he/she values receiving [avoiding] that reward [punishment] and feels the behavior required is doable.

If $H$’s accuracy is low, either in (1) the perception that $T$ believes $H$ can and will act; (2) the perception that $T$ has a sufficient level of attraction [aversion] to the proffered reward [punishment]; or (3) both, $H$ might make promises [threats] that will yield little, if any, motivation for $T$. Further, if $H$’s low perception accuracies cause $H$ to make an attempt to utilize power that $T$ views as illegitimate, this might lead to a loss of future power for $H$, since $H$’s promises [threats] will be revealed to be hollow. Moreover, low accuracy by $H$ might also increase the strength required of future rewards [punishments] in order to make the perceived probability * strength of reward [punishment] sufficient to motivate desired behaviors from $T$. High perception accuracy, on the other hand, should lead to stable or increased future power as $H$’s word remains untested and/or will be shown credible.

Raven (1992) noted the potentially strong power of approval and acceptance from a valued other as a source of reward power (personal reward power) and the threat of rejection or ostracism from such a power holder as a source of coercive power (personal coercive power). This delineates them from the impersonal forms of these power bases (e.g., monetary rewards in the former case and termination in the latter).

The risks of low interpersonal perception accuracy in relation to valence level of the reward [punishment] should be greater when personal forms are enacted since the reward [punishment] in such cases is the social approval [disapproval] of $H$. $T$ in fact might not care if $H$ adores or despises $T$. When the reward [punishment] is impersonal in nature, risks of low accuracy in relation to valence should be lower since the reward [punishment] at hand is more concrete.

We turn next to the less rudimentary types of power—legitimate power, referent power, expert power, and informational power. The motivating ability of these power bases lies not in rewards or punishments that $H$ might give or withhold in exchange for $T$’s behaviors but, rather, in $H$’s abilities and expertise, social station, or social desirability. Each of these four power bases can yield internalized cognitive changes for $T$; when such changes occur, they have the potential to guide $T$’s future behaviors.
Legitimate Power

Legitimate power is that power which has as its basis culture, tradition, or structure. All forms of legitimacy as a basis of power rely, implicitly or explicitly, on H conveying to T: “I have a right to ask you to do this and you have an obligation to comply” (Raven, 1992, p. 220). H perceives that she has the right to prescribe behavior to T, and T acts because of a feeling of oughtness. Ultimately, the motivation of legitimacy arises from some internalized norm or value within T; H need not cultivate these values. Bases for legitimacy can be very broad (e.g., H holds the position of religious leader in a culture in which religion is valued and T is a member) or very specific or narrowly prescribed (e.g., H holds the title of “Line B nighttime supervisor”).

Although much research has focused most on legitimacy arising from positional or authoritative pressures (Cialdini, 1988), there are other forms of legitimate power that arise from social norms and are more subtle. One such form is the legitimate power of reciprocity which prescribes quid-pro-quo exchange within relationships. Legitimate power of equity, on the other hand, is based on the idea of compensatory norms—“I have worked hard and suffered, so I have a right to ask you to make up for it” (Raven, 1992, p. 221). Legitimate power of responsibility relies on the presumed responsibility to help those who cannot help themselves and/or mankind’s willingness to aid another voluntarily.

Attempts by H to leverage legitimate power suggest that H believes that T perceives him or her as the holder of legitimate power, and the accuracy of such meta-perceptions should influence the motivation arising from those attempts. If H’s meta-accuracy is low and H presents as a legitimate power holder, the power utilization attempt is likely to yield little, if any, motivation for T (T to H: “Who do you think you are?”). Further, H’s low meta-accuracy and subsequent failed power utilization attempt should lead to a loss of future legitimate power because H’s credibility—a necessity in norm-based authority—will have been diminished by the failed attempt. Conversely, high meta-accuracy should lead to increased future legitimate power for H by enabling successful power utilization attempts and preventing H from attempting to utilize legitimate power that does not actually exist.

The importance of perception accuracy in relation to legitimate power should vary in accordance with the source of legitimacy underlying it. In formal legitimacy situations such as when H is in a formal position of power over T, for example, meta-accuracy should be comparatively less important than in informal situations. Organizational hierarchies are typically well-defined and there exists a strong norm within most organizations to follow the directions of one’s superior; the perceptions that T holds about H’s legitimacy should matter little if H is the CEO and T wishes to remain employed, for example.

Conversely, in legitimacy of dependence scenarios, interpersonal perception accuracy should be very important. If H erroneously perceives that T is susceptible to dependence manipulations when in fact T is not, the influence attempt would likely be unfruitful. Moreover, such an ill-informed power utilization attempt would also likely erode T’s respect for H, and as a consequence, the loss of other bases of power for H over T (e.g., referent or expert power) could result.

Referent Power

Referent power is that power that has as its basis T’s desire to identify with or feel as one with H (as an individual referent or member of a referent group). H’s referent power is evidenced by T behaving in such a way as to win the acceptance of H. Conversely, a referent or referent group which T dislikes and/or evaluates negatively may influence T to disassociate himself from H. Referent power can exert influence in a variety of life domains; as a simple illustration, a teenager may misbehave at school in order to win the acceptance of peers and carry that same behavior into home life even though those peers are not in the home to observe the behaviors.

From a meta-perception and meta-accuracy vantage point, while H can unwittingly exercise either positive or negative referent power, intentional attempts to leverage a relationship (or potential relationship) as a source of power suggest that H believes that T perceives H as an attractive person with whom to be associated. The accuracy of that meta-perception should determine the motivating capacity of those attempts.
In instances in which \( H \)'s meta-accuracy is high, \( T \) should be motivated by the desire to be one with \( H \) to the extent that \( T \) values that oneness. High meta-accuracy should lead to increased future referent power because the successful referent power utilization attempts it should enable would draw \( T \) closer to \( H \). If \( H \)'s meta-accuracy is low, however, \( H \) might attempt to leverage the relationship or potential relationship, but this attempt should either yield little or no motivation for \( T \) (\( T \) to \( H \): “I do not want to be your friend, so why would I give you the better lunch period?”) or even repulse \( T \) (\( T \) to \( H \): “I was going to join that club, but now that I know that you are a member and you have asked me to join, I am not going to.”).

**Expert Power**

Expert power relies on \( H \)'s level of expertise, with \( T \) making the assessment of that expertise against \( T \)'s own knowledge and/or against an absolute standard. Expert power acts on the way \( T \) thinks and, in doing so, indirectly leads to changes in \( T \)'s behavior. The range of expert power is more restricted than referent power, though halo effects sometimes do occur.

Viewed through a meta-perceptions and meta-accuracy lens, \( H \)'s belief that \( T \) perceives \( H \) as being an expert in a given area is a necessary condition for \( H \) to attempt to leverage that power. The accuracy of that meta-perception should determine the motivating capacity of those attempts. Negative expert power (i.e., that power which results in someone doing the opposite of what an expert says because the person does not trust the expert), indicates \( H \)'s meta-perception of his or her expert status is erroneous. When \( H \) correctly perceives that \( T \) sees \( H \) as a knowledgeable expert, \( T \) should be motivated by that perception to the extent that \( T \) feels expert advice is necessary and should be heeded.

If \( H \)'s meta-accuracy is low, \( H \) might present as an expert and attempt to exert expert power, but that attempt should yield little, if any, motivation for \( T \) (\( T \) to \( H \): “I don’t need your help!”). Further, \( H \)'s low meta-accuracy might also lead to a loss of future expert power because \( H \)'s credibility might be diminished, and credibility underlies expertise-based power. High meta-accuracy, on the other hand, should lead to increased future power because a successful expert power utilization attempt would reinforce \( H \)'s expert status.

**Informational Power**

Informational power is a subset of expert power that does not depend on shared group membership with the “expert”; \( T \) and \( H \) are socially independent. A simple illustration is French and Raven’s example of \( T \) asking a stranger for directions in a foreign city. In that example, \( T \) assumes \( H \) holds sufficient expertise to direct \( T \). Raven (1992) distinguishes direct and indirect informational power, based on differences in the way in which information is presented. In situations in which \( H \) holds a lower position than \( T \), an indirect presentation (e.g., if \( T \) were to overhear \( H \) discussing a course of action for an upcoming decision) might be more powerful than an explicit presentation of a logical argument by \( H \) to \( T \) (such as if \( T \) were to come to \( H \) and suggest that a course of action be adopted).

The outcome of a decision to utilize a direct or indirect route in exercising informational power should be influenced by \( H \)'s meta-accuracy. If \( H \) believes that \( T \) views \( H \) as having sufficient standing as to proffer unsolicited information to aid \( T \) in a decision and that is, in fact, the case (high meta-accuracy), then \( T \) is more likely to welcome that information and act upon it than if \( T \) did not actually hold such favorable views of \( H \). If, however, \( H \)'s meta-accuracy is low and \( T \) does not view \( H \) as having sufficient standing or knowledge to proffer information and \( H \) makes a direct attempt at utilizing information power, \( T \) might forego that influence even if the course of action suggested is the best option, ceteris paribus.

Conversely, if \( T \) views \( H \) as competent and knowledgeable and \( H \) elects to utilize an indirect route to exercise informational power because of \( H \)'s low meta-accuracy (i.e., failure to recognize that \( T \) views him or her as competent and knowledgeable), the strength of \( H \)'s influence attempt might be reduced. For example, an indirect influence attempt would not allow \( H \) the opportunity to interact directly with \( T \) and emphasize why the information should be acted upon.
DISCUSSION

Notions of social power are deeply enmeshed with such critical aspects of organizational psychology and organizational studies as leadership and leader-member exchange (e.g., Detert & Burris, 2007; Liden & Maslyn, 1998), social influence (e.g., Cialdini & Goldstein, 2004), empowerment (e.g., Conger & Kanungo, 1988; Gordon, 2005), organizational politics (e.g., Zaleznik, 1970) and, more recently, the study of “dark-side” behaviors like abusive supervision, bullying, and discrimination (e.g., Barclay, 1982; Robinson & Bennett, 2000; Tepper, Henle, Lambert, Giacalone, & Duffy, 2008). This paper sought to advance the study of interpersonal power and influence techniques by emphasizing the importance of interpersonal perception, meta-perception, and meta-accuracy.

Given the enduring importance of power within the workplace and of power studies to organizational scholarship, we hope that this paper stimulates further discussion about the role of interpersonal perceptions in interpersonal power dynamics. We contended that power utilization decisions are informed by interpersonal perceptions. We further argued that the accuracy of those perceptions influence targets’ reactions when power utilization attempts are made and might also influence future power dynamics. Future research that refines and/or empirically tests the theoretical advancements we have proposed should prove valuable, both for research and for practice.

ENDNOTE

1This section will demonstrate theory expansion using the reward power base; however, all statements are equally valid for coercive power. The reader can understand the latter by replacing the word immediately preceding square brackets with the words inside those brackets.

REFERENCES


We integrated the personality and conflict management (I/O psychology) literature and established the Big Five personality traits and their facets as predictors of conflict management styles. 621 participants completed the Rahim Organizational Conflict Inventory-II and the NEO PI-R personality scale. Agreeableness and its facets explained significant amount of variance (4-23%) in conflict management styles. Machiavellian individuals (less straightforward, compliant and modest) preferred to dominate, compliant individuals were less trusting, and altruistic individuals preferred to self-sacrifice for an integrative solution. By randomly splitting the sample, the key findings were cross-validated. Our results are relevant to selection decisions and designing training programs.

INTRODUCTION

Interpersonal conflict is an inevitable element of personal and work relationships and there are marked differences in how individuals respond to disagreements. Some might avoid conflict as unpleasant and worrisome (Tepper, Duffy, & Shaw, 2001), whereas others may approach it aggressively and boldly (Baum & Shnit, 2003). Is it possible that these varied responses to conflict situations are shaped by individual differences in personality? Are some individuals more prone to creating conflict in their workplace interactions? Is there a conceptual fit between personality dimensions and conflict management styles? A few researchers have attempted to answer these questions by providing empirical evidence that the Big Five personality factors predict conflict management styles. However, less is known about how specific Big Five facets might predict conflict management. We address this gap by bringing together the literatures on personality and conflict management, and extending our understanding of how the specific facets of the Big Five, particularly Agreeableness, predict conflict management styles amongst peers.
RELEVANT PRIOR RESEARCH

Conflict Management and Concern for Self and Others

Typologies of conflict management styles capture the various ways in which opposing parties deal with disagreements (Blake & Mouton, 1964; Rahim, 1983a; Thomas, 1976). A widely used typology conceptualizes conflict management as a balancing act between two contrasting dimensions: showing concern for self and showing concern for others (Rahim, 1983a). Within this framework, a dominating style shows high concern for self and low concern for others, an integrating style reflects high concern for self and high concern for others, and an avoiding style depicts a low concern for self and for others. Conceptually, these two conflict management dimensions of concern for self and concern for others map on to two personality dimensions that are most closely related to social behavior: control/dominance/hostility versus submissiveness/affiliation/friendliness (Fiske, Cuddy, & Glick, 2007).

Individual differences in temperament and psychological needs are linked to preferred ways of managing conflict. For instance, individuals who are less concerned about others adopt a harsh hostile-dominant style; and those who are sympathetic use a socially effective style (Gold, 1999). Those focusing on differences between self and others are more competitive whereas those focusing on similarities are cooperative (Stapel & Koomen, 2005). Further, strong dominance needs are linked to a competing style, strong affiliation needs to an accommodating style, strong nurturance needs to a compromising style, and strong achievement, endurance, and nurturance needs with an integrating style (Schneer & Chanin, 1987; Utley, Richardson, & Pilkington, 1989). Thus, Agreeableness-related dispositional qualities like trust, tolerance, or nurturance are related to greater concern for others.

Agreeableness and Concern for Self and Others

The prominent Big Five personality model offers a logical framework for analyzing conflict management styles. Within this model, Agreeableness pertains to maintaining positive relations with others (Graziano & Eisenberg, 1997; Jensen-Campbell & Graziano, 2001). It predicts behaviors such as minimizing interpersonal conflict (Graziano, Jensen-Campbell, & Hair, 1996), maintaining intragroup cooperation (Graziano, Hair, & Finch, 1997), and utilizing negotiation (Graziano & Tobin, 2002). Conceptually, Agreeableness is closely associated with “communion” in the two-dimensional model of Bakan (1966) and Wiggins (1991).

Agreeableness might defuse conflict through its link to anger regulation and inhibiting negative affect (Ahadi & Rothbart, 1994). Highly agreeable individuals rate their partners positively and are more likely to use negotiation to resolve conflict; disagreeable individuals rate their partners negatively and use power assertion to resolve conflict (Graziano, Jensen-Campbell, & Hair, 1996). Further, high Agreeableness is associated with conflict avoidance and failing to engage in constructive resistance; and low Agreeableness combined with high conscientiousness is associated with confronting an abusive supervisor (Tepper, Duffy, & Shaw, 2001). Finally, high Agreeableness combined with high extraversion is positively related to a problem solving approach, and low Agreeableness combined with high extraversion is associated with imposing one’s own goals on others (Nauta & Sanders, 2000).

Even when hostile thoughts provide triggers for anger and aggression, highly agreeable individuals respond less aggressively and effectively regulate/inhibit the anger-revenge relationship (Meier & Robinson, 2004; Meier, Robinson, & Wilkowski, 2006; Wilkowski & Robinson, 2008). They more readily access prosocial thoughts when faced with aggression cues to diffuse angry thoughts and feelings (Meier et al, 2006). Thus, Agreeableness seems to be conceptually and empirically linked to increased levels of self-control when experiencing interpersonal conflict (Ahadi & Rothbart, 1994; Jensen-Campbell & Graziano, 2001). Agreeableness appears to work in tandem with Neuroticism and Extraversion when it comes to negotiating conflict situations. Highly neurotic individuals get angry when they are also low on agreeableness (Ode, Robinson, & Wilkowski, 2008), and highly extraverted individuals adopt a competing style if they are less agreeable whereas less extraverted individuals are more likely to adopt an accommodating style if they are more agreeable (Wood & Bell, 2008).
**Big Five and Conflict Management Styles**

Only a handful of studies have examined the link between the Big Five personality traits and various models of conflict management styles. Previously, the five broad factors (and not the facets) have been examined in relation to Rahim’s (1983a) conflict management styles, and positive associations between Agreeableness and Neuroticism with avoiding, Extraversion with dominance, and Extraversion, Conscientiousness and Openness with the integrating style have been noted (Antonioni, 1998; Park & Antonioni, 2006). Moberg (1998, 2001) examined the Big Five facets in predicting conflict management but did so using Putnam and Wilson’s (1982) Organizational Communication and Conflict model rather than Rahim’s model and reported that although 10% of the variance in the non-confrontation style was explained by three broad domain scores (neuroticism, openness, and conscientiousness), 24% of the variance in the same variable was explained by five facet scores (self-consciousness, openness to ideas, straightforwardness, compliance, and competence). Thus, the limited research that has examined the Big Five facets suggests that they are likely to provide a more fine-grained perspective on conflict management styles and deserve closer study.

**Current Study**

Although some researchers have examined dispositional and personality factors in relation to conflict management, the conceptual fit between the Big Five personality facets and conflict management styles has not been sufficiently investigated and need to further examined. The current study addresses this gap by examining the Big Five (broad factors and facets) as predictors of college students’ conflict management style when dealing with their friends, colleagues, or roommates. Based on prior empirical evidence and the theoretical logic that an individual’s personal disposition may incline them towards a style that is congruent with their way of thinking and feeling about conflicts, we hypothesized the following:

1. Given its conceptual and empirical relevance, and because Agreeableness, is reflected in a high concern for others and low concern for self, we predicted that it would be the strongest predictor of conflict management styles.
2. Low Agreeableness and high Extraversion would be positively associated with a dominating style which is reflected in a low concern for others and high concern for self.
3. High Openness as well as high Conscientiousness would be positively associated with an integrating/compromising style which is reflected in a moderate to high concern for self and others.
4. High Neuroticism would be positively associated with an avoiding style which is reflected in a low concern for self and others.

We did not have any specific predictions for the Big Five facets and the five conflict management styles due to the limited research in this area of study. For this reason, we obtained a large sample to cross-validate our findings.

**METHOD**

A survey including the NEO PI-R (Costa & McCrae, 1992), the Rahim Organizational Conflict Inventory-II (RCOI-II, Form C for peers; Rahim, 1983b), and demographic background items (sex, major, year of study, and ethnicity) was completed by 621 undergraduate students. Data collection occurred in small group sessions and students received partial course credit for participation. The sample consisted of 45% males and 55% females, 93% between 18-23 years of age, with most being freshmen (61%) or sophomores (20%), and a few juniors (10%) and seniors (8%). The sample was predominantly European American (67%), followed by African American (22%), Latino American (4%) or of other ethnic origins (7%).

Conflict management styles were assessed using the 28-item ROCI-II, Form C (Rahim, 1983b; 2001). Responses to this instrument are categorized into one of five conflict management styles used when...
interacting with peers (integrating, obliging, avoiding, compromising, and dominating). Sample items for each conflict management styles include, integrating style (I try to bring all our concerns out in the open so that the issues can be resolved in the best possible way), obliging style (I give in to the wishes of my peers), avoiding style (I attempt to avoid being “put on the spot” and try to keep my conflict with my peers to myself), compromising (I usually propose a middle ground for breaking deadlocks), and dominating (I sometimes use my power to win a competitive situation). Prior research has established acceptable psychometric properties for this scale including test-retest and internal consistency reliability coefficients for the subscales (Rahim, 2001). Further, convergent and discriminant validity as well as confirmatory factor analysis of the five styles have been established on different samples and at different organizational levels (Rahim & Magner, 1995). The alpha coefficients for the present study were: integrating, 7-items (.81), obliging, 6-items (.73), avoiding, 6-items (.76), compromising, 4-items (.64), and dominating, 5-items (.71).

The NEO PI-R (Costa & McCrae, 1992) consists of 240 items designed to measure the Big Five personality factors (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) as well as six facets for each of these five factors. Sample items for each of the five personality traits include, Neuroticism (I often get angry at the way people treat me), Extraversion (I am dominant, forceful, and assertive), Openness (I often enjoy playing with theories or abstract ideas), Agreeableness (I really like most people I meet), and Conscientiousness (I’m a productive person who always gets the job done). Psychometric properties of the NEO-PI-R have been well-established and the Cronbach coefficient alpha values for each of the Big Five factors for this study ranged between .86 and .90.

RESULTS

Given our large sample and that facet-level results were exploratory; we report inferential statistics that were significant at $p < .001$ and, for cross-validation across two randomly split subsamples, at $p < .01$.

Correlation Analyses

Several of the Big Five dimensions were significantly associated with each of the conflict management styles (See Table 1). The dominating style was positively associated with Extraversion and Conscientiousness and negatively associated with Agreeableness. Second, the avoiding style was positively associated with Neuroticism and Agreeableness and negatively associated with Extraversion and Openness. Third, the obliging style was positively associated with Neuroticism, Extraversion, and Agreeableness. Finally, the integrative and compromising styles were positively associated with Extraversion, Openness, Agreeableness, and Conscientiousness, and negatively associated with Neuroticism.

Cross-Validation

To provide additional empirical evidence, we sought to establish the robustness of our findings by cross-validating our results across two samples. First, we randomly split our large data set of 621 participants into two samples (317 participants in sample 1 and 304 participants in sample 2) for internal replication. For each sample, a multiple correlation was computed between the Big Five factors as predictors and a conflict style as the outcome variable. For cross-validation, $b$ weights from sample 1 regression analyses were used to predict the same conflict management style in sample 2. For further confirmation, backwards cross-validation was also conducted by reversing this process (sample 2 $b$ weights applied in sample 1 data). These results indicate a significant and positive association between the predicted and actual scores and support the reliability of our findings (see Table 2).

Regression Analyses (Big Five Broad Factors)

Hierarchical multiple regression analyses were conducted to provide a focused representation of Agreeableness and the remaining Big Five personality dimensions predicting each of the conflict
management styles. First, five separate regression analyses were conducted with Agreeableness entered in the first block and the remaining four broad personality factors entered in the second block as predictors of each conflict management style. In the interest of parsimony, only those significant at the .001 level are reported (see Table 3). Beginning with the model that explained the most variance for the dominant style, 16% of the variance was explained by Agreeableness, \( F(1, 619) = 117.41, p < .001 \), adjusted \( R^2 = .16 \). An additional 10% was explained by Extraversion and Conscientiousness, \( F(5, 615) = 43.19, p < .001 \), adjusted \( R^2 = .25 \). For avoidance, 4% of the variance was explained by Agreeableness, \( F(1, 619) = 23.11, p < .001 \), adjusted \( R^2 = .03 \). An additional 10% of the variance was explained by Neuroticism \( F(5, 615) = 19.76, p < .001 \), adjusted \( R^2 = .25 \). For the obliging style, 5% of the variance was explained by Agreeableness, \( F(1, 619) = 34.46, p < .001 \), adjusted \( R^2 = .05 \) and an additional 6% was explained by Neuroticism \( F(5, 615) = 15.40, p < .001 \), adjusted \( R^2 = .10 \). For the compromising style, 5% of the variance was explained by Agreeableness, \( F(1, 619) = 29.04, p < .001 \), adjusted \( R^2 = .05 \) and an additional 5% was explained by Extraversion, \( F(5, 615) = 14.35, p < .001 \), adjusted \( R^2 = .06 \). Finally, for the integrating style, 4% of the variance was explained by Agreeableness, \( F(1, 619) = 25.17, p < .001 \), adjusted \( R^2 = .05 \) and an additional 11% by Openness, Extraversion, and Conscientiousness, \( F(5, 615) = 21.17, p < .001 \), adjusted \( R^2 = .10 \).

Similarly, five separate regression analyses were conducted with Agreeableness entered in the first block and the remaining four of Big Five broad personality factors entered in the second block as predictors of each conflict management style; this was done for each of the two split samples (see Table 4). Across both samples, Agreeableness emerged as a significant predictor in step 1 for each of the five conflict management styles. In step 2, Extraversion significantly predicted the dominating style and Neuroticism significantly predicted avoiding and obliging styles across the two samples.

**Regression Analyses (Big Five Facets)**

To closely examine the facets of the Big Five factors, we conducted another set of five separate regression analyses and reported only those significant at the .001 level (see Table 5). First, 23% of the variance in the dominating style was explained by low scores on Straightforwardness, Compliance and Modesty (facets of Agreeableness), \( F(6, 614) = 30.28, p < .001 \), adjusted \( R^2 = .22 \). Second, 10% of the variance in the use of the avoiding style was explained by increased levels of Compliance and decreased levels of trust (facets of Agreeableness), \( F(5, 614) = 11.85, p < .001 \), adjusted \( R^2 = .06 \) and an additional 8% by Self-consciousness (facet of Neuroticism), \( F(12, 608) = 10.97, p < .001 \), adjusted \( R^2 = .06 \). Third, 7% of the variance in the obliging style was explained by increased levels of Compliance (facet of Agreeableness), \( F(6, 614) = 7.14, p < .001 \), adjusted \( R^2 = .06 \). Fourth, 10% of the variance in the use of the compromising style was explained by increased levels of Altruism (facet of Agreeableness), \( F(6, 614) = 11.79, p < .001 \), adjusted \( R^2 = .10 \). Fifth, 10% of the variance in the integrating style of conflict management was accounted for by increased levels of Altruism (facet of Agreeableness), \( F(6, 614) = 11.34, p < .001 \), adjusted \( R^2 = .09 \). In short, the best predictor of each of the five conflict management styles was a facet of Agreeableness albeit a different one for almost all the conflict styles.

Similarly, we conducted another set of five separate regression analyses with the facets of the Big Five factors that had previously emerged as significant predictors of each conflict management style on each of the two subsamples (see Table 6). Across both samples, Straightforwardness predicted the dominating style, Compliance predicted the avoiding and obliging styles, and Altruism predicted the compromising and integrating styles.

Finally, since compromising and integrating styles tend to overlap in Rahim’s model and altruism (an Agreeableness facet) predicted both these styles, we examined whether they were distinct. For this, we conducted stepwise regression analyses with altruism in step 1 and included the facets that had emerged as significant predictors in the previous analysis in the second step. In step 2, warmth significantly predicted the compromising style; whereas the facets of positive emotions, ideas, dutifulness, feelings, and deliberation significantly predicted the integrating style. Thus, although these styles overlap and are associated with Agreeableness, they are slightly distinct at the facet level. In particular, the integrating
style involves a greater degree of conscious choice for achieving a win-win solution and a greater degree of complexity with a wider range of facets predicting it.

DISCUSSION

The results of our study provide strong support for a conceptual fit between the Big Five factors and conflict management styles, and more specifically, establish Agreeableness as a key predictor of various conflict management styles. Additionally, we document the robustness of our findings by cross-validating them in split samples both exceeding 300 participants. A particularly interesting contribution is the finding that different facets of Agreeableness explained significant variance in each of the five conflict management styles. For example, low scores on straightforwardness, compliance and modesty were the strongest predictors of the dominant style, implying that more Machiavellian or deceitful individuals preferred to dominate those with whom they disagreed. Compliant individuals were less trusting of others and their passive approach of avoiding conflict reflects an evasion of disharmony. Compliant individuals also preferred to be obliging and sacrifice their needs for others. Finally, altruistic individuals were most likely to be self-sacrificing and willing to compromise in finding an integrative solution.

The present study's results confirm and clearly extend previous research by Antonioni (1998) who only examined the broad personality factors of Extraversion, Openness, and Conscientiousness as being positively associated with the integrating style. Our research has also gone further in identifying new and interesting results regarding the significant role of Agreeableness and its various facets in predicting each of the different types of conflict management styles. Human resource managers involved in selection and placement decisions or designing training programs could use these results in helping employees reduce conflict escalation by developing meta-cognitive skills for self-regulating thoughts and response styles (Gold, 1999). These findings could be used along with existing self-help books, lectures, and training programs in teaching behaviors like compromising and integrating skills and open styles of behaving. There is evidence that cognitive training exercises can be used to train individuals in controlling aggressive responses by self-activating helpful thoughts when faced with a hostile situation (Meier, Wilkowski, & Robinson, 2008).

We are limited in our ability to generalize our results from college students and their conflicts with peers to other settings like employees in an organization. Conflicts in college could be less consequential because college students can change roommates and friends, or graduate and move on. Additionally, no causal conclusions can be drawn as our data are cross-sectional and only one method of data collection was used (i.e., self-report), and this may have affected participants’ responses. Future research studies could examine the role of other personality traits as well as various types of conflicts with various levels of employees. Examining the effects of personality in managing conflict situations within longitudinal interpersonal relationships might reveal causal connections, confounding variables, or interactions between personality traits. Such research could potentially address the limitations of using self-report measures of personality to explain other self-reported constructs. Further, researchers could also investigate the effectiveness of training programs focusing on interpersonal skills (e.g., compromising and communicating) as mediators of the relation between personality and conflict management, and whether personality (e.g., Openness) moderates training effects. Finally, it would be useful to examine whether interventions that focus on reinforcing Agreeableness related qualities have lasting effects on how individuals manage conflict. Overall, our study provides robust empirical support for the role of Agreeableness and its various facets and offers a compelling conceptual framework for explaining why individuals differ in how they manage conflict situations.

REFERENCES

Halverson, D. Kohnstamm, & R. Martin (Eds.), Development of the structure of temperament and personality from infancy to adulthood (pp. 189-208). Hillsdale, NJ: Erlbaum.


**APPENDIX**

**TABLE 1**
MEANS, STANDARD DEVIATIONS, RELIABILITIES, AND CORRELATIONS

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Neuroticism</td>
<td>2.95</td>
<td>.42</td>
<td></td>
<td>.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Extraversion</td>
<td>3.48</td>
<td>.39</td>
<td>.90</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Openness</td>
<td>3.43</td>
<td>.37</td>
<td>-.21</td>
<td>.88</td>
<td>.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Conscientious</td>
<td>3.28</td>
<td>.38</td>
<td>-.38</td>
<td>.25</td>
<td>.03</td>
<td>.15</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Integrating</td>
<td>3.83</td>
<td>.56</td>
<td>-.18</td>
<td>.27</td>
<td>.26</td>
<td>.20</td>
<td>.22</td>
<td>.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Obliging</td>
<td>3.30</td>
<td>.59</td>
<td>.16</td>
<td>.11</td>
<td>-.06</td>
<td>.24</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Avoiding</td>
<td>3.05</td>
<td>.70</td>
<td>-.13</td>
<td>-.11</td>
<td>.19</td>
<td>-.04</td>
<td>-.06</td>
<td>.33</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Compromising</td>
<td>3.68</td>
<td>.58</td>
<td>-.10</td>
<td>.24</td>
<td>.21</td>
<td>.15</td>
<td>.63</td>
<td>.31</td>
<td>.05</td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Dominating</td>
<td>3.33</td>
<td>.70</td>
<td>.02</td>
<td>.18</td>
<td>.05</td>
<td>-.40</td>
<td>.14</td>
<td>.14</td>
<td>-.03</td>
<td>-.07</td>
<td>.10</td>
<td>.71</td>
</tr>
</tbody>
</table>

**Note:** $N = 621$.

The alpha reliability coefficients are in boldface along the diagonal. Correlations (absolute values) $\geq .09$ are significant at $p < .05$ Correlations (absolute values) $\geq .11$ are significant at $p < .001$ (two-tailed).

**TABLE 2**
MULTIPLE CORRELATIONS PREDICTING CONFLICT MANAGEMENT STYLES FROM THE BIG FIVE

<table>
<thead>
<tr>
<th>Conflict Management Styles</th>
<th>Sample 1</th>
<th>Cross-validation$^a$</th>
<th>Sample 2</th>
<th>Cross-validation$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominating</td>
<td>.49</td>
<td>.52</td>
<td>.54</td>
<td>.47</td>
</tr>
<tr>
<td>Avoiding</td>
<td>.37</td>
<td>.37</td>
<td>.38</td>
<td>.36</td>
</tr>
<tr>
<td>Obliging</td>
<td>.31</td>
<td>.36</td>
<td>.36</td>
<td>.31</td>
</tr>
<tr>
<td>Compromising</td>
<td>.37</td>
<td>.24</td>
<td>.31</td>
<td>.31</td>
</tr>
<tr>
<td>Integrating</td>
<td>.46</td>
<td>.24</td>
<td>.35</td>
<td>.36</td>
</tr>
</tbody>
</table>

**Note:** All multiple Rs are $p < .001$.

Sample 1 N=317 (51% of the total sample)
Sample 2 N=304 (49% of the total sample)

$^a$These correlations applied the Sample 1 $b$ weights to the data in Sample 2.

$^b$These correlations applied the Sample 2 $b$ weights to the data in Sample 1.
## TABLE 3
HIERARCHICAL MULTIPLE REGRESSIONS WITH AGREEABLENESS IN THE FIRST BLOCK AND THE REMAINING BIG FIVE PERSONALITY DIMENSIONS IN THE SECOND BLOCK AS PREDICTORS OF THE FIVE CONFLICT MANAGEMENT STYLES

<table>
<thead>
<tr>
<th>Factor</th>
<th>Predictor</th>
<th>Beta***</th>
<th>ΔR²</th>
<th>R² total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Agreeableness³</td>
<td>-.40</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>Step 2</td>
<td>Extraversion⁰</td>
<td>.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conscientiousness</td>
<td>.17</td>
<td>.10</td>
<td>.26</td>
</tr>
<tr>
<td>Avoiding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Agreeableness³</td>
<td>.19</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>Step 2</td>
<td>Neuroticism⁰</td>
<td>.27</td>
<td>.10</td>
<td>.14</td>
</tr>
<tr>
<td>Obliging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Agreeableness³</td>
<td>.23</td>
<td>.05</td>
<td>.05</td>
</tr>
<tr>
<td>Step 2</td>
<td>Neuroticism⁰</td>
<td>.22</td>
<td>.06</td>
<td>.11</td>
</tr>
<tr>
<td>Compromising</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Agreeableness³</td>
<td>.21</td>
<td>.05</td>
<td>.05</td>
</tr>
<tr>
<td>Step 2</td>
<td>Extraversion</td>
<td>.14</td>
<td>.05</td>
<td>.10</td>
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<tr>
<td>Integrating</td>
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</tr>
<tr>
<td>Step 1</td>
<td>Agreeableness³</td>
<td>.20</td>
<td>.04</td>
<td>.04</td>
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<tr>
<td>Step 2</td>
<td>Openness</td>
<td>.19</td>
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<tr>
<td></td>
<td>Extraversion</td>
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<tr>
<td></td>
<td>Conscientiousness</td>
<td>.14</td>
<td>.11</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Note: ***p <.001.

*** All the beta values are significant at the .001 level.

³= this is the largest beta and is replicated at the .01 level in the randomly split two halves of the sample.
### TABLE 4

**HIERARCHICAL MULTIPLE REGRESSIONS WITH AGREEABLENESS IN THE FIRST BLOCK AND THE REMAINING BIG FIVE PERSONALITY DIMENSIONS IN THE SECOND BLOCK AS PREDICTORS OF THE FIVE CONFLICT MANAGEMENT STYLES FOR SAMPLE 1 AND SAMPLE 2**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Sample 1 Predictors</th>
<th>Beta</th>
<th>ΔR²</th>
<th>Sample 2 Predictors</th>
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*Note: ** p < .01 *** p < .001*

Split File = 1, Sample 1 N = 317; Split File = 2, Sample 2 N = 304
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*Note: **p < .01 ***p < .001

*** All the beta values are significant at the .001 level.

* This is the largest beta and is replicated at the .01 level in the randomly split two halves of the sample.
TABLE 6
HIERARCHICAL MULTIPLE REGRESSION ANALYSES WITH THE FACETS OF THE BIG FIVE PERSONALITY TRAITS AS PREDICTORS OF EACH OF THE FIVE CONFLICT MANAGEMENT STYLES FOR SAMPLE 1 AND SAMPLE 2

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Note: **p<.01 ***p <.001
Split File=1, Sample 1 N=317; Split File=2, Sample 2 N=304
An aging phenomenon entitled the Second Adulthood has confronted society’s perception of workplace spirituality and its relation to psychological contracts. As a result, organizations are now faced with developing psychological contracts that are increasingly relational with a refocus on employee development and a broader scope that includes the spiritual needs of employees. In this article, propositions are developed to assert the need for more relational aspects of psychological contracts to bolster workplace spirituality, and ultimately, help satisfy the spiritual needs of employees. Recommendations for transitioning from transactional psychological contracts to more relational and spiritual psychological contracts are provided.

Noted author Gail Sheehy is widely recognized for her contribution to the study of the human life-cycle. Her compelling research, conducted for her book *New Passages*, reveals an aging phenomenon which has paralleled the newest generations’ entrance into the realm of adulthood. Sheehy notes that a person’s age has typically served “as a uniform criterion for normalizing the roles and responsibilities that individuals assume over a life-time” (Sheehy, 1995, p.3). In the past, “the ages of 21 and 60 or 65 came to define the lower and upper boundaries of participation in the adult world” (Sheehy, 1995, p.3). Within the ages of 21 to 65, most individuals typically partake of adult-type activities such as graduating from college, having a full-time job, getting married, having children, starting retirement, etc. This newest generation of adult workers, however, is challenging those previously accepted criterion. More specifically, they are challenging society’s preconception that middle age begins at the age of forty.

Entitled the Endangered Generation, those individual’s born between 1966 and 1980 have inadvertently created what Sheehy refers to as the Second Adulthood (beginning between the ages of 45 to 65). This era of Second Adulthood is presenting unique challenges for companies and corporations who attempt to employ and retain this generation of workers. Fueled by progress in medical technology and pharmaceutical research, many people today are easily reaching the age of 80. Research has shown that “a woman who reaches age fifty today – and remains free of cancer and heart disease – can expect to see her ninety-second birthday” (Sheehy, 1995, p.5). This is a sharp contrast to the preponderance of human history whereby only one in ten people lived to the age of 65 (Sheehy, 1995). The fact remains that people today are not only living longer but are also choosing to remain employed longer.

Complicating the issue further, the newest generation has also managed to postpone, for approximately ten years, most of the previously accepted timeframes for partaking in critical adult-type
activities. This voluntary postponement of critical adult-type activities (i.e. finding full-time employment, marriage, having children, and retirement) has had a drastic impact on today’s working professionals. It is recognized that this voluntary postponement usually begins in a person’s early twenties.

According to Sheehy, most young people today do not leave home (pull-up roots) until their mid-twenties. Instead, they remain in what Sheehy refers to as the stage of Provisional Adulthood until their early thirties. The simple delay of leaving home, or pulling-up roots, consequentially “[moves] all the other stages [of adulthood] off by up to ten years” (Sheehy, 1995, p.48). Middle age for the newest generation does not even begin until they are well into their fifties.

Another unique aging phenomenon of this Endangered Generation happens when they reach the ages of twenty-eight and thirty-two. There is a noticeable pattern during this time whereby a small crisis or breaking point happens in their life. This breaking point, as Sheehy refers to it, causes the individual to begin to search for life’s purpose. This external search subsequently turns internal as they attempt to create meaning and value in their own existence. The apathetic attitude of their twenties transcends into the desire to ‘stand for something more’.

The workforce today is forced to reconcile the disparity between the Endangered Generation’s search for meaning and well-being in their life contrasted against the graying of their existing employee base. This era of Second Adulthood is being flooded with workers who want to remain gainfully employed in meaningful jobs well into their sixties and beyond. Organizations, however, are seeing this phenomenon come to pass in the search for highly relational psychological contracts. The search for meaning in life and the desire to ‘stand for something more’ is often first sought out in an individual’s career choice (i.e. workplace spirituality). The youngest of Sheehy’s Endangered Generation is currently in their early thirties, and they are searching for careers that offer them more than just a monthly paycheck.

Our literature review attempted to find information on psychological contracts and spirituality, but none were found. Therefore, this research is exploratory and the purpose of the article is to use theoretical development to construct a conceptual framework detailing how workplace spirituality (i.e. meaning in life) affects the psychological contract.

LITERATURE REVIEW AND PROPOSITION DEVELOPMENT

Transactional and Relational Psychological Contracts

Psychological contracts are subjective individual beliefs concerning the specific provisions of the employment exchange relationship between the individual and employer (Grimmer & Oddy, 2007, p. 154). According to Rousseau and McLean Parks (1993) and Rousseau (1995), psychological contracts are composed of transactional and relational components that are diametrically opposed on a psychological contract continuum. According to Millward and Herriot (2000), however, psychological contracts contain varying degrees of transactional and relational aspects while on this contract continuum. The relational contract is characterized by “beliefs about obligations based on exchanges of socio-emotional factors (e.g. loyalty and support) rather than purely monetary issues” (Gimmer & Oddy, 2007, p. 155). Transactional contracts differ from relational contracts in so much that transactional contracts “describe obligations that are economic and extrinsic” rather than obligations that are “emotional and intrinsic in nature” (Gimmer & Oddy, 2007, p. 155). The psychological contract continuum is comprised of seven main constructs, however, transactional and relational contracts differ on only five constructs: focus, time-frame, stability, scope, and tangibility (Rousseau & McLean Parks, 1993) (see figure 1). In this article we develop a theoretical link between three facets of workplace spirituality (self-work immersion, meaning from work, and interconnectedness) and the five constructs of the psychological contract and the positioning of those psychological contracts on the transactional and relational continuum.
Overview of Spirituality

Workplace spirituality is a stream of research that is increasingly being legitimized in management literature as evidenced by the numerous quality publishing outlets hosting this topic. Spirituality at work has been defined as an inner experience of an individual where the effects of that experience can be evidenced by their behavior (McCormick, 1994). Neck and Milliman (1994, p. 9) define spirituality as “expressing our desires to find meaning and purpose in our lives and is a process of living out one’s set of deeply held personal values”. Spirituality is defined as an individual’s inner source of inspiration by Dehler and Welsh (1994). Workplace spirituality is also defined as an internal value, attitude, emotion, belief, or other internal substance that affects the individual’s behavior (Moore & Casper, 2006). Ashmos and Duchon (2000, p. 137), define workplace spirituality as the “recognition that employees have an inner life which nourishes and is nourished by meaningful work taking place in the context of a community”. Giacalone and Jurkiewicz (2003, p. 397) define workplace spirituality as “a framework of organizational values evidenced in the culture that promote employees’ experience of transcendence through the work process, facilitating their sense of being connected to others in a way that provides feelings of completeness and joy”. Thus, numerous definitions of workplace spirituality exist, however, there is still “no widely accepted definition of spirituality” (Karakas, 2009, p. 91). As a result, in this article spirituality is defined as an employee and organizational paradigm leading to an individual and his or her organization embracing and seeking to develop employee interconnectedness and sense of community, employee self-work immersion, and employee sense of purpose and meaning at work. Thus, this
definition of ‘spirituality’ is used throughout and is used to reference each of the three aspects of workplace spirituality, unless otherwise indicated.

Importance of Spirituality

Workplace spirituality is a growing concern for many organizations. While the effect of high levels of organizational spirituality is still being researched, there is some preliminary evidence of its benefits. For example, there is evidence that organizations with higher degrees of workplace spirituality can outperform organizations with little or no workplace spirituality (Lloyd, 1990). Moore and Casper (2006) found evidence that increased workplace spirituality reduces turnover intentions. Jurkiewicz and Giacalone (2004) suggest that organizations that embrace workplace spirituality can grow faster, more efficiently, with higher rates of return in comparison with organizations that do not foster workplace spirituality. Evidence of employees’ increased health levels, personal growth, and augmented levels of self-esteem were some outcomes of workplace spirituality suggested by Krahnke, Giacalone, and Jurkiewicz (2003).

One part of an organization that is of particular importance to the notion of a psychological contract is the organization’s culture. Konz & Ryan (1999) assert that an organization’s mission, vision, policies, and procedures flow directly from the internal spirituality of founders and top management teams. These, in turn, comprise the organizational culture. Thus, if an organization’s culture is spiritual it is a result of the influence of the spirituality of top management (Konz & Ryan, 1999). Simply stated, top management spirituality is “enunciated” within the firm’s culture (Konz & Ryan, 1999).

Interconnectedness

Interconnectedness is one of the more accepted dimensions of workplace spirituality, and is commonly defined as feeling part of a larger united whole. Mitroff and Denton (1999, p. 83) defined interconnectedness as “the basic feeling of being connected with one’s complete self, others, and the entire universe”. In fact, Mitroff and Denton (1999, p. 83) go so far as to say “if a single word best captures the meaning of spirituality and the vital role that it plays in people’s lives, that word is interconnectedness”. Moore and Casper (2006) used affective organizational commitment as a proxy measure of interconnectedness. This is because affective organizational commitment is characterized by an individual’s submersion into an organization at such a level where they can be identified by their involvement or membership in the organization (Meyer, Allen, & Smith, 1993). Researchers Bell and Taylor (2001) purport that work organizations have become people’s most significant context for relationships, surpassing institutions such as faith communities.

Interconnectedness is the feeling of belonging and relationship with others where the sum of the group is larger than the individual. Many researchers such as Mitroff and Denton (1999), King and Nicol (1999), and Burack (1999) assert that spirituality transcends peoples’ differences. For example, Mitroff and Denton (1999a, p. 23-25) discuss spirituality as “universal and timeless”, “the ultimate source and provider of meaning and purpose”, “the sacredness of everything”, and “the deep feeling of interconnectedness of everything”. Jurkiewicz and Giacalone (2004), describe interconnectedness as a relationship to others that provides positive feelings, while trust is described as an integral part of interconnectedness by Burack (1999). Simply put, an individual’s spirituality is a deep-level characteristic that unites rather than divides. Therefore, as employees in a highly spiritual firm spend time with one another at work and develop relationships their spirituality unites them together and increases their cohesion or sense of interconnectedness. Therefore, although the workforce may be comprised of diverse employees, in a firm that embraces workplace spirituality the employees are united through the common bond of spirituality, which yields interconnectedness.

Self-Work Immersion

Self-work immersion, as it is labeled in this manuscript, is a fairly nebulous concept. Some researchers discuss this concept in terms of “holism” and “wholeness” of individuals (Bell & Taylor, 2001). Wagner-Marsh and Conley, (1999) describe this concept as the ability to express the inner
substance called spirituality. Csikszentmihalyi (1990) researched what has been termed as “flow”. This “flow” is purported to be work that is done with every fiber of an individual’s being. At the heart of this research is an individual who can engage their spiritual self into their work. Often, organizations develop cultures that stifle an individual’s ability to pull from deep within to accomplish their work. Thompson (2000) equates a spiritual workplace with one that supports the development of employees’ spiritual attributes. Ashmos and Duchon (2000) assert that high levels of organizational support require the acknowledgement that employees have an inner life that is just as important as their work lives. “Employees have an inner life related to the soul and accessed through practices such as meditation, self-reflection and prayer” (Bell & Taylor, 2001, p. 2). Therefore, the definition of self-work immersion in this manuscript is the convergence of deeply held spiritual aspects of individualism including mind, body, soul, and an individual’s work.

According to Rousseau and Schalk (2000, p. 252), individualism is “associated with attempts to actively master one’s environment rather than passive acceptance”. Self-work immersion is where an individual engages their deep-level characteristics into work efforts. Individualism is associated with the “freedom to follow one’s personal preferences and beliefs” (Rousseau & Schalk, 2000, p. 253).

Although most discussion of individualism conjures ideas of Machiavellianism, narcissism, greed, and self-centeredness, to name a few, in its purest form it is about outcomes related to individual accomplishment. Therefore, while highly spiritual firms promote unity and interconnectedness, they must also support the development of the individual. Only through individual development and contributions does the organization benefit as a whole. Burack (1999, p. 281) proclaims, “it is people who now will make the difference” in organizations and their work outcomes.

**Meaning from Work**

Meaning from work is an important component of workplace spirituality. Many researchers borrow from Abraham Maslow’s (1943) work on motivation and use the term “self-actualization” to describe meaning from work. Maslow (1943) conceptualized self-actualization as a point where an individual began to fulfill their purpose and derive meaning through work. Self-actualization is the highest level of motivation where all your lower level needs are met, and an individual is growing and developing into all they can be through the process of work. This is the point where individuals enjoy their careers because it is full of meaning and fulfillment. For example, the artist that begins to paint his or her masterpiece for the love of artistic expression, rather than for ego gratification, financial rewards, or some lower level need. During this process the artist is said to be self-actualizing. Burack (1999) discussed this process as a point where the mind and spirit mesh together through work. Milliman, Czaplewski, and Ferguson (2003) use terms like achievement, personal reward, and growth to describe this process. Human growth and development at the highest level is how Butts (1999) describes this level of work. Thus, in this manuscript meaning from work is defined as the fulfillment of an individual’s need to have meaning in and through their occupation (i.e. self-actualization).

**Workplace Spirituality and the Constructs of the Psychological Contract Continuum**

Focus is the extent to which a psychological contract contains transactional and relational elements. Transactional contracts are focused on “economic terms, have a specific duration, are static, narrow in scope, and are easily observable” (Uen, Chien, & Yen, 2009, p. 216). Thus, organizations that view employees as commodity like resources, as opposed to a spiritual organization that views employees as a source of competitive advantage (Moore, 2010), generally focus on the transactional or non-developmental aspects of the psychological contract.

Contrary to the transactional organization view, a spiritual organization focuses on the developmental aspects of employees through its formal human resource policies and or its culture (Moore, 2010). As a result, a highly spiritual organization’s psychological contract focus would be on more relational or emotional and spiritual aspects of work, rather than economic exchange. There does remain, however, a need for organizations to include transactional aspects of the psychological contract even when they are a spiritual organization. For instance, an organization can be spiritual while preferring an outcome based
compensation system. As a result, firms may need to broaden the focus of their psychological contract to encompass aspects of both the transactional and the relational. As a result, the following proposition is developed:

**Proposition 1:** Organizations with increasingly spiritual paradigms will have psychological contracts focusing on increasingly relational elements

**Time Frame** of a psychological contract refers to “the perceived duration of the employment relationship” (Sels et al., 2004, p. 267). The time frame can range from a transactional length that is specific and definite, to a relational length that is open-ended and indefinite. Thus, a transaction oriented organization would have a more definite time frame in employment relationships because the organization would not view an employee as a long-term investment to be developed over time.

For an organization to be a highly spiritual organization it would imply a psychological contract that is relational in nature because of the focus on long-term development of employees through the nurturing of spiritual aspects of the workplace (Burack, 1999; Milliman et al., 2003; Karakas, 2009; Moore, 2010). This long-term focus is often operationalized through the promotion of meaning from work.

Self-actualization is the term generally used to describe the process of deriving meaning from work. In an organization that supports self-actualization or meaning from work; two important aspects of the time frame become evident.

First, the second level of Maslow’s (1943) hierarchy of needs can be succinctly stated as motivation due to fear of being without basic needs that, in today’s society, come from being employed (e.g. shelter, clothing, etc.). According to Laabs (1995), removing fear from an organization reduces employee boundaries allowing for employee growth, and ultimately meaning from work or self-actualization. One major way in which organizations can remove fear is to develop a more relational psychological contract that is open-ended or has an indefinite time frame. Although this may or may not equate to employment for life, it can reduce the fear of losing one’s employment.

Second, deriving meaning from work is a process, not a final destination. According to Freud, every individual develops what he called an “ego-ideal”. An individual’s ego ideal is purported to be some paragon that is as unique and diverse as human beings. When individuals begin to self-actualize they are working towards becoming all that they can be (Maslow, 1943). As individuals become closer to being all they can be, (i.e. their ego-ideal), the model of perfection for that individual changes and causes them to continue to strive for their more advanced ego-ideal. Therefore, a psychological contract that leans towards being more relational, which is to say more indefinite or open-ended, allows for individuals to continually develop and reach for higher and higher goal attainment. Thus, proposition 2 is developed:

**Proposition 2:** Organizations with increasingly spiritual paradigms will have psychological contracts with an increasingly relational time frame

**Stability** of a psychological contract is “the degree to which the psychological contract is limited in terms of its ability to evolve and change without an implied renegotiation of the terms” (Sels et al., 2004, p. 467). Rousseau (1995) discusses the case of Inland Oil and their “era of no guarantees”. In this case, management of Inland Oil drastically changed the psychological contract with employees without any renegotiation due to plummeting oil prices in the late 1980’s. As a result of the downswing in the oil industry, management responded with a typical slash and burn strategy characterized by downsizing, reducing benefits, freezing promotion opportunities, etc. The psychological contract changed and employees felt as though their careers were halted, with no advancement opportunities, more work for less pay, and little or no career or employee development. Therefore, the changes in the psychological contract were perceived as very negative because they stunted the development of employees without the benefit of renegotiation.

Changes to the psychological contract, can however, be viewed as positive events if the purpose of the changes are to augment the development of employees. As discussed previously, as individuals derive
meaning from their work and begin to self-actualize their goals become loftier. Consequently, the psychological contract must be stable enough to provide some security, but dynamic enough to keep up with the changing developmental needs of employees. Therefore, spiritual organizations continually provide development opportunities to employees (Thompson, 2000), which translates into a more dynamic psychological contract. Thus, the following proposition is developed:

**Proposition 3:** Organizations with increasingly spiritual paradigms will have psychological contracts that are increasingly relational and dynamic.

Scope is generally described as the dimension of the psychological contract that refers to the division between an individual’s work and personal life (Sels et al., 2004, p466). If the scope is broad, the division between work and personal life is not well delineated, and if the scope is narrow the division is distinctly delineated. Thus, a broad scope is more relational while a narrow scope is more transactional.

As a result of today’s organizations demanding more commitment, efficiency, and greater production from employees at all levels, many employees are spending “a majority of their lives in the work setting” (Moore, 2010, p. 63). Likewise, employees are looking for their work arrangements to fulfill more than just economic needs because work organizations now have “meanings beyond the ‘nine-to-five’ working hours; it is even becoming the cradle of meaning in modern knowledge society” (Karakas, 2010, p. 93). As a result, organizations must begin to care for the “whole” person (Bell & Taylor, 2001). Several researchers have found evidence that employees’ individual life outcomes, and not just increased performance at work, are augmented when employed by organizations with programs designed to increase employee spirituality in the workplace (Giacalone & Jurkiewicz, 2003; Fry, 2003; Reave, 2005). Thus, organizations that ascribe to nurturing spirituality in the workplace should have a broader scope in their psychological contracts than organizations that do not ascribe to nurturing spirituality in the workplace. This is because spiritual organizations attempt to care for the ‘whole’ person and not just the worker. Therefore, we posit the following proposition:

**Proposition 4:** Organizations with increasingly spiritual paradigms will have psychological contracts with an increasingly relational and broadening scope.

Tangibility is generally defined as the extent to which the psychological contract terms are “unambiguously defined, explicitly specified and clearly observable for third parties” (Sels, Janssens, & Van den Brande, 2004, p. 466). Tangibility is directly related to the degree to which an organization controls employees through formal policies, procedures, and specific formal agreements. A spiritual workplace would of course have some control mechanisms, however, a spiritual workplace would also allow employees the latitude to develop and express their spirituality in a climate of trust (Burack, 1999). In fact, some researchers warn that a potential downfall of the spirituality at work movement is an attempt by some to use spirituality as a new management control mechanism (Brown, 2003; Milliman et al., 2003; Karakas, 2010).

Therefore, spiritual organizations will continue to have many highly tangible elements of the psychological contract; however, highly spiritual organizations will also have many intangible elements of the psychological contract such as “trust, honesty, integrity and other virtuous elements” (Moore, 2010, p. 62), or anything that will “make a larger contribution than the typical company to the welfare of employees, customers, and society” (Milliman et al., 2003, p. 430). The more tangible elements of the psychological contract in highly spiritual firms should not intrude upon the intangible elements that support the development and free and open expression of employee spirituality because “a culture based on mutual respect and worth of each employee” (Wagner-Marsh & Conley, 1999, p. 297) is the basis of the spiritual organization. Thus, the following proposition is develop:

**Proposition 5:** Organizations with increasingly spiritual paradigms will have increasingly more elements of the psychological contract that are intangible.
Synthesis

Robinson, Kraatz, and Rousseau (1994) found evidence indicating that as employees perceived their place of employment as becoming a less relational workplace, employees recognized a shift in their psychological contract towards a more transactional contract. The transactional psychological contract can be characterized by organizations with little or no investment in their employees’ spiritual development where employees are considered to be a resource with a specific commodity level value and potential, rather than an invaluable rare resource with unlimited potential. Firms with outdated management processes that treat employees as expendable resources or at a minimum replaceable or interchangeable instead of as sources of competitive advantage (Moore, 2010) could be associated with increasingly transactional psychological contracts.

The relational psychological contract is characterized by organizations that embrace the spirituality movement by viewing employees as sources of competitive advantage (Moore, 2010) and promoting management processes with more employee centered approaches (Burack, 1999). Increasingly spiritual organizations make considerable investment into the development of employees’ “search for simplicity, meaning, self-expression, and interconnectedness to something higher” (Karakas, 2009, p. 90). Thus, we posit the following proposition:

Proposition 6: Organizations with increasingly spiritual paradigms will have psychological contracts that are increasingly relational while organizations with increasingly anti-spiritual paradigms will have psychological contracts that are increasingly transactional.

RECOMMENDATIONS AND CONCLUSION

As previously suggested by Gail Sheehy, workplace spirituality is a growing concern for many organizations and employees alike. Many reasons for this rising concern has been purported by spirituality researchers, including: the “graying” of the workforce, postponing pulling-up roots in early adulthood, employee disenchantment with top management teams, increased hours spent at work, and backlash from downsizing and job elimination policies. As a result, spiritual work environments are becoming important and often sought after characteristics of job seekers. According to Mitroff and Denton (1999), spirituality has become a major firm characteristic that potential employees look for, especially with members of the Endangered Generation. Therefore, it stands to reason that job seekers are looking for organizations that offer a greater mix of relational components in the psychological contract which can signal the existence of spirituality in a particular workplace.

The main difference between highly transactional and highly relational psychological contracts is how employees are viewed by the organization. As discussed previously, organizations that prefer transactional contracts view employees as commodities with limited value and potential that can be replaced or interchanged for other resources. This is contrast to spiritual organizations with more relational psychological contracts which view each employee as an invaluable rare resource with unlimited potential. It is this latter evaluation of employees that job seekers, and more specifically the Endangered Generation, are increasingly searching for. As organizations embrace a more spiritual culture their psychological contract offering becomes more palatable for job seekers searching for meaning in life. Consequently, organizations can expect to begin to reap the many benefits that come from a spiritual workplace.

Therefore, the following recommendations are beginning points extended to organizations to help them transition from a transactional to a more relational psychological contract while increasing their workplace spirituality. As stated previously, much of the workforce has an increasing desire to increase their level of spiritual fulfillment through their work organizations, in part, because of the extended time and ever increasing demands placed on them by those organizations. As a result, organizations that want to have more relational psychological contracts and increased workplace spirituality need to refocus their
culture on the developmental of employees as a source of competitive advantage by expanding their scope to consider the needs of the whole employee.

One way for organizations to refocus and expand their scope, and ultimately become more spiritual and have more relational psychological contracts, is to begin communicating a message of inclusiveness and long term vision that includes current employees. This communication will help make current employees view the psychological contract construct of time frame as more open ended, and thus, more relational. In addition, any recruitment and hiring communication should also include this new message of inclusiveness and long term vision. This will, as a result, signal to new employees a more relational psychological contract, and ultimately workplace spirituality, from the beginning of their employment.

The second recommendation for organizations to refocus and broaden their scope is to begin offering sustained and multifaceted development opportunities for employees at all organizational levels and lengths of tenure. An organization’s support of the continual progression of employee development opportunities would help create a more dynamic and relational psychological contract. In addition, an increase in the spirituality of the organization would ensue by providing the tools employees need to self-actualize and find meaning from work.

Next, organizations should develop new policies or refine existing policies to be formal but somewhat open and flexible. If the policies are developed carefully they can communicate the needed amount of stability to ensure current and future employees that the organization supports their continued growth. These policies can also communicate the organizational flexibility needed to enact the support of continued growth for employees.

Finally, formal policies should also be carefully crafted as discussed above; however, control mechanisms in those policies should be used judiciously in order to have the right mix of tangible and intangible elements. For example, a tuition reimbursement policy could be structured in such a way as to allow employees the opportunity to expand their education without being overly restrictive. The policy could allow employees to decide upon the educational opportunities they want to pursue while trusting the employees to make the justification of why and how their continuing education augments their development and ultimately adds to the organization, instead of restricting the educational opportunities to a select curriculum.

In conclusion, one of the growing trends in today’s workplace is a demand for more work with fewer employees. As a result, most individuals are working a greater number of hours every week. Since so much time is being spent at work many employees are turning to the workplace for many social, relational, growth, and developmental needs, i.e. spirituality. In return for fulfilling these needs and often augmenting the emotional and mental health of employees, many individuals are giving back to their organizations in the form of decreased turnover intentions, increased performance, greater efficiencies, and increased creativity and innovation. Organizations may soon find that it is the highly relational psychological contracts and their overt emphasis on workplace spirituality which will reconcile the disparity between the newest generation’s searches for purpose and meaning juxtaposed against the graying of their existing employee base.

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Other-Rating and Context-Specific Personality Judgments of Agreeableness and Extraversion

Tom C. Oliver
University of Guelph

Deborah M. Powell
University of Guelph

The use of other-reports and context-specific personality ratings are two measurement approaches that may enhance the predictive validity of personality measures. Previous empirical studies have found that other raters account for context-specific trait information for their judgments of targets’ affective and cognitive processes, but not for their judgments of targets’ behavior. However, the current study, using an experimental study design that manipulated context as a demand constraint on trait expressions, found that other raters account for context for their judgments of both a highly behavioral trait (i.e., Extraversion) and a highly cognitive trait (i.e., Agreeableness).

INTRODUCTION

Personality assessments are frequently used in organizational practice and research as a predictor of job performance (Rothstein & Goffin, 2006). Despite their popularity, personality measures are often criticized for producing “low” predictive validity (e.g., Morgeson et al., 2007). One measurement approach to personality assessment that may address this issue is the use of other-rating personality measures, in which observers (e.g., co-workers, hiring managers) evaluate targets’ personalities. Other-rater personality measures can be used by hiring managers to evaluate candidates’ job-relevant traits in job interviews (e.g., Van Iddekinge, Raymark, & Roth, 2005), and for co-workers and managers to evaluate a colleagues’ job-related traits for developmental or performance appraisal purposes. With job performance as a criterion, other-ratings of personality have been found to have higher and incremental predictive validities than traditional self-rating personality measures (Connelly & Ones, 2010).

A second measurement approach that may enhance the predictive validity of personality measures is to account for context in personality ratings. There is growing consensus within the organizational literature that behavior is a function of both personality (i.e., cross-situationally stable traits) and the variability of situational contexts and demands (e.g.; Fieleson 2007; Heller, Perunovic, & Reichman, 2009). One of the more popular frameworks used to understand person by situation interactions is the conditional approach to disposition (Mischel & Shoda, 1995). This framework construes personality as the sum of a stable pattern of “If situation X, then behavior Y” contingent dispositions, referred to as signatures. For example, Ann may be consistently sociable when dealing with her boss and other senior executives in her organization (where the demand is interacting with higher power co-workers), and consistently unsociable when dealing with her direct reports and her peers (where the demand is
interacting with lower power co-workers). Self-report frame-of-reference personality measures that incorporate broad signatures (e.g., “How talkative are you at work?” vs. “How talkative are you at home?”), have been found to have validity advantages over general self-ratings in the prediction of job and home performance (Lievens, De Corte & Schollaert, 2008).

The primary purpose of the current study is to test whether others’ use signatures to evaluate different personality traits. Previous findings suggest that raters do use signatures to explain a person’s cross-situational inconsistency (Welbourne, 1999), and to make inferences about another person’s affective (i.e., goals, motives, preferences) and cognitive attributes (i.e., opinions, thoughts, values; Plaks, Shafer, & Shoda, 2003). However, when making inferences about a target’s general five factor personality traits (i.e., Goldberg, 1993), a direct experimental study design found that other raters used signatures in their ratings of Agreeableness, but not in their ratings of Extraversion (Kammrath, Mendoza-Denton, & Mischel, 2005). This finding suggests that other-ratings may not accurately account for signatures for traits such as Extraversion. The potential for other-ratings to provide useful incremental prediction to performance is contingent on the accuracy of these ratings. Therefore, by directly testing the discrepancy between other-ratings of Agreeableness and Extraversion, the current study will help address how personality measures designed for other-ratings should be constructed in order to accurately account for context.

The Composition of Extraversion and Agreeableness

Personality traits capture three distinct psychological mechanisms: 1) affect - emotional reactivity, motivation, preferences; 2) behavior - overt and passive; and 3) cognition - attitudes, beliefs, and thoughts (Werner & Pervin, 1986). Pytlik-Zillig, Hemenover, and Dienstbier (2002) conducted a content analysis of several well-used Five Factor Model inventories (i.e., NEO-PI-R, Big Five Inventory, Unipolar Adjective Trait Descriptors, and the Revised Interpersonal Adjective Scales). For these four inventories they found that each trait had a different composition of these mechanisms. For example, they found that Extraversion was measured by more behavior-based items (e.g., “I always talk to others”) than was Agreeableness, and Agreeableness tended to be measured by more cognitive-based items (e.g., “It is important to be generous with others”) than was Extraversion. Researchers have suggested that differences in the composition between personality traits may cause differences in raters’ judgments of personality (Kammrath et al., 2005; Watson, 2004).

Previous research has found that raters are most likely to use signatures when inferring affective and cognitive attributes, such as intention and motivation (e.g., Chen, 2003; Plaks et al., 2003; Reeder, Vonk, Ronk, Ham, & Lawrence, 2004). Therefore, when raters judge a target for a cognitive-based trait, such as Agreeableness, raters likely use the target’s relevant behaviors (e.g., an apology) and the situation (e.g., the risk associated with the apology), to determine the target’s underlying intentions (e.g., sincerity; Kammrath et al., 2005). For example, suppose two individuals, Paul and Tony, leave work early from their respective jobs. Paul is caught and punished by his boss, whereas Tony’s boss is unaware that he left work early. Both Paul and Tony apologize. Observers could use the different signature information to perceive Tony as more sincere because his apology put him at risk for being reprimanded by his boss. In contrast, Paul’s apology may be construed as an effort to reduce his boss’s anger. Thus, signatures provide important information for ratings of cognitive-based traits.

In contrast to the findings regarding cognitive-based traits, raters’ judgments of behavior-based dispositions are primarily influenced by the observability of the target’s behavior (e.g., Buss & Craik, 1983; John & Robbins, 1993). Ratings of a behavior-based trait, such as Extraversion, are formed more on the rater’s judgments of the consistency and frequency of the target’s trait-relevant behaviors than on the rater’s judgments of the target’s underlying intentions (Kammrath et al., 2005). For example, if Paul is frequently observed talking for long periods of time, then raters are likely to judge him as Extraverted without considering what motivated him to talk.

Although signatures are not typically used when judging behavioral traits, it is possible that raters use signatures when judging Extraversion in certain situations. Kammrath and colleagues (2005) suggested that raters might judge a target’s Extraversion based on whether he or she is able to perform a trait-
relevant behavior. If this is true, then raters should use signatures when situations have different degrees of constraints, which are situational cues that make it more difficult for a person to demonstrate behaviors (Tett & Burnett, 2003). For example, a library is a constraint for Extraversion because it is a more difficult setting to act sociable. Therefore, if raters observe a target acting sociable in a library, then they are likely to infer that the target is highly Extraverted given that the behavior occurred within a constraint.

The current study extends previous work in personality judgment by investigating two research questions: 1) Do raters account for signatures in their ratings of Extraversion (i.e., a trait that is highly behavior-based), as well as Agreeableness (i.e., a trait that is more cognitive-based)? 2) Does raters’ use of signatures differ between behavior-based personality items and affective- and cognitive-based personality items?

**Current Study**

The current study incorporated Kammrath and colleagues’ (2005) experimental vignette design. Their vignettes involved a target interacting with a partner. Signature conditions were designed by matching the target’s behavior (either “sociable” or “unsociable”) to a particular situation (the partner’s gender, status, or familiarity). Therefore, the target consistently demonstrated the same behavior for the same situation. For example, in the “male” signature condition every time a target was with a male she was sociable, whereas every time the target was with a female she was unsociable. In contrast, for the “female” signature condition every time a target was with a female she was sociable, whereas every time the target was with a male she was unsociable. Using Kammrath et al.’s design, differences in raters’ personality ratings between signature conditions can be compared in order to infer raters’ signature use in making their personality judgments of others.

As discussed, Kammrath and colleagues (2005) found that raters appeared to use signatures for judgments of Agreeableness, but not for judgments of Extraversion. This finding may have been due to a design issue in their study. Specifically, in their vignettes the target’s behavior was described as only sociable or unsociable, which are behaviors directly relevant only to Extraversion. This means that raters did not observe any behaviors directly relevant to Agreeableness. As a result, one possible explanation for Kammrath et al.’s findings is that raters relied more on signatures for their judgments of a target’s Agreeableness because there was an absence of objective Agreeableness-relevant behaviors. If the vignettes had described the target exhibiting behaviors directly relevant to Agreeableness, then raters may not have incorporated signatures in their judgments of the targets’ Agreeableness. To address this issue, the current study used two different sets of vignettes. The first set of vignettes was designed so that the target demonstrated either high or low Agreeableness; in the second set the target demonstrated either high or low Extraversion.

A second explanation for the lack of effect of signature for other-ratings of Extraversion in the Kammrath and colleagues’ (2005) study is that the study included no trait-relevant constraints. Constraints should cause raters to perceive that it is more difficult for someone to perform a behavior. Therefore, raters are expected to place higher value on a behavior when it is performed within the context of a constraint, and rate the target higher on the relevant trait (Tett & Burnett, 2003). For example, it is more difficult for a person, say again Ann, to demonstrate sociable behavior when she is working with an introverted colleague than when she is working with an extraverted colleague. Therefore, a rater who observed Ann when she acted sociable with an introverted colleague would likely place more value on her behavior, and rate Ann higher on Extraversion, then if that rater had observed Ann acting sociable with an extraverted colleague. In contrast, for the Kammrath et al. (2005) study it is likely that raters did not perceive that it was any more difficult for the target to act sociable with a male colleague than a female colleague, thus the Extraversion ratings were similar across the two signature conditions.

To address the issue of a lack of trait-relevant signature conditions, the current study incorporated differences in constraints across signature conditions. Signature conditions were designed by patterning a target’s positive behavior (behavior associated with high trait scores) and negative behaviors (a behavior associated with low trait scores) to be consistent within a particular situational constraint. Two signature conditions were created for each of Agreeableness and Extraversion: the High Constraint signature and
the Low Constraint signature. For the High Constraint signature, the target demonstrated a positive behavior within the context of one type of constraint and a negative behavior within the context of another set of constraints. In contrast, for the Low Constraint condition the target demonstrated a positive behavior within a non-constraint context, and a negative behavior within the context of a constraint.

For the current study, participants rated the target’s Agreeableness and Extraversion in either the High Constraint or the Low Constraint condition. Participants in the High Constraint conditions observed a target who demonstrates high trait behavior in the context of constraints; whereas participants in the Low Constraint conditions observed a target who only demonstrates positive behavior when constraints were not present in the context. Therefore, between the two conditions it was expected that participants would perceive a difference in the level of difficulty for the target to express positive trait expressions. Participants in the High Constraint conditions would perceive that positive behavior was expressed in a more difficult context, which would cause them to judge the target to be higher on the trait descriptors than participants in the Low Constraint condition. Therefore, the following two hypotheses were proposed:

\[ H1a: \text{The High Constraint target will be rated with higher ratings of Agreeableness than will the Low Constraint target.} \]

\[ H1b: \text{The High Constraint target will be rated with higher ratings of Extraversion than will the Low Constraint target.} \]

Personality researchers have argued that differences in the affective, behavioral, and cognitive composition between traits may affect raters’ judgments of those traits (Pytlik-Zillig et al., 2002; Werner & Pervin, 1986). The current study investigated whether differences in the composition within traits affects the influence of situation on raters’ personality judgments. To do this, the Agreeableness and Extraversion scales from the HEXACO-PI-R (Ashton & Lee, 2008) were refined to include an equal number of affect-, behavior-, and cognitive-based items within each trait. By refining the scales to have equivalent affective, behavioral, and cognitive composition, it was possible to directly test within trait differences across the different item types, rather than making between personality trait comparisons as has been done in previous studies. As discussed earlier in this paper, behavior is more observable than are affect and cognition, therefore ratings of behavior-based items should be less affected by situational cues than are affect- or cognitive-based items. Furthermore, raters tend to make motivational inferences when considering signatures, therefore affect- and cognitive-based items should be more affected by signatures than are behavior-based items. Based on this logic we put forth the following two hypotheses:

\[ H2a: \text{The effect of signature will be greater for the affect- and cognitive-based items of Agreeableness than for the behavior-based items of Agreeableness.} \]

\[ H2b: \text{The effect of signature will be greater for the affect- and cognitive-based items of Extraversion than for the behavior-based items of Extraversion.} \]

METHOD

Participants
University undergraduate students at mid-sized Canadian university (N = 198) participated in the current study for course credit in a psychology course. The mean age of participants was 18.9 years, and 86% (N=173) of the participants were female. All participants were fluent in the English language.

Materials & Procedure
The study was conducted online. Participants were informed that the purpose of the study was to investigate how well they could rate a person’s personality when they have only observed the person over a few short situations.
Sixteen vignettes were written for the current study. Each participant received only eight of these vignettes. The first four vignettes were designed to be relevant to Agreeableness, and the last four vignettes were designed to be relevant to Extraversion. For both the Agreeableness and the Extraversion vignettes, participants were randomly placed into one of two signature conditions: 1) The High Constraint condition included a constraint within in each of the four vignettes; 2) The Low Constraint condition included a constraint in only two of the four vignettes. The random placement of participants into either the High Constraint or Low Constraint condition for the four Agreeableness vignettes was independent of the random placement of participants into the High Constraint or Low Constraint condition for the four Extraversion vignettes.

Each vignette included one of three types of constraints. For both Agreeableness and Extraversion, the High Constraint condition included two vignettes with a relational constraint (i.e., the constraint is due to an interpersonal situation) and two vignettes with a job demand constraint (i.e., the constraint is due to a job demand), and the Low Constraint condition included two no constraint vignettes, and the same two relational constraints included in the High Constraint conditions (see Table 1).

### TABLE 1

**CATEGORIZATION OF BEHAVIOR-CONSTRAINT PROFILES FOR EACH EXPERIMENTAL CELL FOR AGREEABLENESS AND EXTRAVERSION**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>No Constraint</th>
<th>Relational Constraint</th>
<th>Job Demand Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Condition 1:</td>
<td>Condition 2:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Constraint</td>
<td>High Constraint</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Condition 1:</td>
<td></td>
<td>Condition 2:</td>
</tr>
<tr>
<td></td>
<td>Low Constraint</td>
<td></td>
<td>High Constraint</td>
</tr>
</tbody>
</table>

All vignettes described a female store manager (i.e., the target). The target for each Agreeableness vignette was “Allison”. For both signature conditions, Allison demonstrated agreement and leniency (positive behavior) in two vignettes, and anger and criticism (negative behavior) in the other two vignettes. For the Agreeable Low Constraint condition, Allison demonstrated an act of positive behavior for the two no constraint vignettes (e.g., Allison approves an employee’s request to miss a mandatory meeting from an employee who has a reputation of never missing a shift), and an act of negative behavior for each of the two relational constraint vignettes (e.g., Allison criticizes an employee who has been known to talk badly about her). In contrast, for the Agreeable High Constraint condition, Allison demonstrated an act of positive behavior for the two relational constraint vignettes and an act of negative behavior for each of the two job demand vignettes (see Appendix 1).

The target for each Extraversion vignette was “Jane”. For both signature conditions, Jane demonstrated sociable behaviors (positive behavior) in two vignettes, and unsociable behaviors (negative behavior) in the other two vignettes. For the Extraversion Low Constraint condition, Jane demonstrated an act of positive behavior for the two no constraint vignettes (e.g., Jane was sociable to an employee who has a good sense of humor) and an act of negative behavior for the two relational constraint vignettes (e.g., Jane is quiet to an employee who has a reputation of keeping to herself). The Extraversion High-
Constraint target demonstrated a sociable act for the two relational constraint vignettes, and an unsociable act for each of the two job demand vignettes (see Appendix 2).

**Personality Ratings**

Scales of Agreeableness and Extraversion from the 100-item HEXACO-PI-R (Ashton & Lee, 2008) were used to make refined scales of Agreeableness and Extraversion. The first and third authors rewrote and revised items. A total of 36 items were included in the final scales for both Agreeableness and Extraversion. The scales included 12 affect-, 12 behavior-, and 12 cognitive-based items.

After participants had finished reading the four Agreeableness vignettes in either the Low Constraint or High Constrain condition, they rated the target on three twelve-item Agreeableness scales. Examples of items for each of the three scales include: Agreeableness Affect, “Allison probably dislikes compromising with people”; Agreeableness Behavior, “Allison likely acts cooperatively when working with individuals she disagrees with”; and Agreeableness Cognitive, “Allison likely believes others’ opinions are worthwhile, even if she doesn’t agree with them”. For each of the scales, there were three items that were representative of each of the four HEXACO facets of Agreeableness (i.e., Flexibility, Forgiveness, Gentleness, and Patience). The Agreeableness Affect, Agreeableness Behavior, and the Agreeableness Cognitive scales all had acceptable levels of internal consistency, $\alpha = .88$, $\alpha = .89$, and $\alpha = .81$ respectively.

After participants had finished reading the four Extraversion vignettes in either the Low Constraint or High Constrain condition, they rated the target on three twelve-item Extraversion scales. Examples of items for each of the three scales include: Extraversion Affect, “It is likely that Jane often feels drained and lethargic”; Extraversion Behavior, “More than likely, Jane tends to act less energetic than most other people”; and Extraversion Cognitive, “Jane’s thoughts probably are usually positive”. For each of the 12-item scales, 3 items were representative of the four facets of Extraversion (i.e., Liveliness, Social Boldness, Social Self-Esteem, and Sociability). The Extraversion Affect, Extraversion Behavior, and the Extraversion Cognitive scales all had acceptable levels of internal consistency, $\alpha = .75$, $\alpha = .90$, and $\alpha = .84$ respectively.

**RESULTS**

Independent samples t-tests were conducted between the two signature conditions for both Agreeableness and Extraversion. As hypothesized in $H1a$, participants who rated the High Constraint target had higher Agreeableness ratings ($M = 3.60$, $SD = 0.44$) than did participants who rated the Low Constraint target ($M = 2.90$, $SD = 0.46$), $t(196) = 11.12$, $p < .001$, $d = 1.58$ (see Table 2 & Figure 1). Further, as hypothesized in $H1b$, participants who rated the High Constraint target had higher Extraversion ratings ($M = 3.63$, $SD = 0.48$) than did participants who rated the Low Constraint target ($M = 3.27$, $SD = 0.54$), $t(195) = 4.99$, $p < .001$, $d = 0.71$ (see Figure 1). As predicted, differences in signature conditions led to differences in ratings of Agreeableness and Extraversion.

Point-biserial correlations (between condition and rating) were used to compare whether there were differences in effect size between the High Constraint and Low Constraint conditions between the Behavior scale and the Affect and Cognition scales for both Agreeableness and Extraversion. For Agreeableness, there was no practical difference for the point-biserial correlation between any of the three scales. The difference between Affect, $r_{pb} = .59$, and Behavior, $r_{pb} = .59$, and the difference between Cognition, $r_{pb} = .59$, and Behavior were not significant; $Hotellings t(198) = 0.00$, $p = .99$, and $Hotellings t(198) = 0.16$, $p = .86$, respectively. For Extraversion, the difference between Cognition, $r_{pb} = .32$, and Behavior, $r_{pb} = .36$, was not significant, $Hotellings t(198) = -1.07$, $p = .29$, and the difference between the Affect, $r_{pb} = .26$, and Behavior scales was significant, but in the opposite direction than predicted, $Hotellings t(198) = -2.39$, $p = .02$. The latter result indicates that for Extraversion raters used signatures more in their ratings of Behavior than in their ratings of Affect. Therefore, $H2a$ and $H2b$ were not supported, as the effect size for affect- and cognitive-based items was not found to be greater than the effect size for behavior-based items for Agreeableness and Extraversion.
TABLE 2
DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>Trait</th>
<th>Mechanism</th>
<th>Signature Condition</th>
<th>High Constraint</th>
<th>Low Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Affect</td>
<td>100</td>
<td>3.52</td>
<td>0.50</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Behavior</td>
<td>100</td>
<td>3.67</td>
<td>0.50</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>Cognition</td>
<td>100</td>
<td>3.62</td>
<td>0.39</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>All</td>
<td>100</td>
<td>3.60</td>
<td>0.44</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Affect</td>
<td>101</td>
<td>3.55</td>
<td>0.47</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Behavior</td>
<td>101</td>
<td>3.71</td>
<td>0.61</td>
</tr>
<tr>
<td>Extraversion</td>
<td>Cognition</td>
<td>101</td>
<td>3.63</td>
<td>0.46</td>
</tr>
<tr>
<td>Extraversion</td>
<td>All</td>
<td>101</td>
<td>3.63</td>
<td>0.48</td>
</tr>
</tbody>
</table>

FIGURE 1
DIFFERENCES FOR RATINGS OF AGREEABLENESS AND extraversion BETWEEN SIGNATURE CONDITIONS

DISCUSSION

The current study found that when making personality judgments, raters do use signatures in their judgments of others’ Extraversion, albeit to a lesser extent than when rating Agreeableness. We also
found that raters do not appear to draw more upon signatures to infer others’ traits when using affective- or cognitive-based personality items than when using behavior-based personality items.

The finding that raters do use signatures when rating Extraversion was in contrast to the findings of the one previous study that investigated this issue (Kammrath et al., 2005). This difference in findings could be due to differences in the situational cues used between the studies. In the current study, the target consistently demonstrated sociability within the context of a constraint or within the context of a non-constraint. As previously discussed, observing the target perform the trait-relevant behavior in a difficult situational context should cause raters to judge the target to have a higher standing on the trait (Tett & Burnett, 2003). In contrast, Kammrath and colleagues’ (2005) study used situational cues for their Extraversion signatures that were actually more relevant to Agreeableness than to Extraversion (i.e., male vs. female, authority vs. peer, familiar vs. unfamiliar; Church, Katigbak, & Prado, 2010). As a result, raters in their study were less likely to value a difference in the expression of positive sociable behavior in one Extraversion signature versus the other. Therefore, the results from the current study suggest that when raters’ value behavior in one situation more than another, signature effects are more likely to be observed.

Our results suggest that affective- and cognitive-based items are not directly responsible for raters’ increased use of signatures. The results were surprising, because raters actually used signatures more when rating the behavioral items than when rating the affective and cognitive items of Extraversion. The use of constraints may explain this finding. Since constraints make it more difficult for a person to demonstrate behaviors (Tett & Burnett, 2003), it is possible that raters used more signature information to judge behavior-based items than when rating affective- or cognitive-based items.

The current findings have implications for assessment research. The findings demonstrate that other-ratings of personality appear to accurately account for cross-situational inconsistencies in trait expression that are associated with differences in context (i.e., signatures), regardless as to whether they are rating a more behavioral trait (i.e., Extraversion) or a more cognitive trait (i.e., Agreeableness). Given that self-ratings are often criticized as producing low predictive validities (e.g., Morgeson et al., 2007), further support for the accuracy of other-ratings adds to the growing evidence that other-ratings can be used in organizational settings to compliment job-candidates’ and employees’ self ratings, and add to the predictive power of organizational assessment and selection systems.

In order to design more valid other-rating measures of personality, the findings from this study suggest that incorporating context allows other raters to report unique trait-relevant information. Accounting for context with self-ratings with such tools as frame-of-reference personality tests (i.e., describing items as ‘at home’ or ‘at work’) has already been found to yield incremental validity over general personality tests for workplace attitudes (Bowling & Burns, 2010) and performance (Lievens et al., 2008). Therefore, designing frame-of-reference personality measures for other-ratings may yield greater incremental validity gains for other-ratings than what has already been found in the literature (Connelly & Ones, 2010). The current experimental study provides the empirical support for future research to empirically examine the predictive powers of other-ratings that incorporate context-based trait descriptive items.

One limitation of the current study was that the vignette design controlled the target’s behavior to single behavioral events. As discussed, when behavior is naturally observed people are able to more consistently and frequently demonstrate behaviors related to a trait such as Extraversion more than a trait such as Agreeableness. Further, with more behavioral cues to observe, raters observing an actual target may not use signatures as the current study suggests. A second limitation to the current study was that the items representing the three different psychological mechanisms were placed one-after-the-other (e.g., A1, B1, C1 …) within the Agreeableness and Extraversion scales. As a result, the differences between affective, behavioral, and cognitive processes may not have been salient to the raters. Future studies may want to consider asking raters to judge the different processes separately, and clearly instructing the raters’ that they are to infer a specific process (e.g., indicate the targets thoughts). Addressing these limitations may help to elucidate the differences in raters’ use of signatures in their judgments of others personality.
REFERENCES


## APPENDIX 1
DETAILED LIST OF BEHAVIOR AND CONSTRAINT MANIPULATIONS FOR
AGREEABLENESS VIGNETTES

<table>
<thead>
<tr>
<th>Signature Condition</th>
<th>Target Behavior</th>
<th>Situational Constraint / Non-Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Constraint</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>1. Approves employee's request to miss the mandatory meeting.</td>
<td>Constraint (Relational Reputation)</td>
</tr>
<tr>
<td></td>
<td>2. In return tells employee she must me with her.</td>
<td>1. Employee has been known to talk badly about the target.</td>
</tr>
<tr>
<td><strong>Low Constraint</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1. Crumples up piece of paper and throws it in the garbage.</td>
<td>Constraint (Disciplinary Reputation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Employee has reputation for being hung over at work.</td>
</tr>
<tr>
<td><strong>High Constraint</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>1. Makes a reminder to phone up employee for an interview</td>
<td>Constraint (Relational Reputation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Employee has been known to disrespect and aruge with targets.</td>
</tr>
<tr>
<td><strong>Low Constraint</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>1. Criticizes the employee.</td>
<td>Constraint (Disciplinary Reputation)</td>
</tr>
<tr>
<td></td>
<td>2. Instructs the employee to develop an action plan to address her issues.</td>
<td>1. Employee has been previously disciplined for discounting products to friends.</td>
</tr>
<tr>
<td><strong>Low Constraint</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td>Constraint (Relational Reputation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Employee has been known to disrespect and aruge with targets.</td>
</tr>
</tbody>
</table>
### APPENDIX 2
DETAILED LIST OF BEHAVIOR AND CONSTRAINT MANIPULATIONS FOR EXTRAVERSION VIGNETTES

<table>
<thead>
<tr>
<th>Extraversion</th>
<th>Signature Condition</th>
<th>Target's Behavior</th>
<th>Situational Constraint / Non-Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Constraint</td>
<td>Positive</td>
<td>Constraint (Employee Reputation)</td>
</tr>
</tbody>
</table>
|              |                     | 1. Jokes with employee about needing to exercise. | 1. Employee is older than the other staff.  
|              |                     |                   | 2. Employee has reputation of keeping to herself. |
|              | Low Constraint      | Non-Constraint    | Constraint (Job Demands work)          |
|              |                     | 1. Employee has good sense of humor.  
|              |                     | 2. Employee is good friends with staff the target and other employees. | 1. Target is rushing to put shipment away.  
|              |                     |                   | 2. Target must read packing slip. |
|              | High Constraint     | Negative          | Constraint (Employee Reputation)       |
|              |                     | 1. Doesn't say anything to employee.  
|              |                     | 2. Apologizes for being quiet.  
|              | Low Constraint      | Constraint        | 1. Employee has reputation of keeping to herself.  |
|              |                     |                   | (Job Demands work)                      |
|              |                     | 1. Employee is older than the other staff.  
|              |                     |                   | 2. Employee has reputation of keeping to herself. |
|              | High Constraint     | Positive          | Constraint (Employee Reputation)       |
|              |                     | 1. Addresses employee by her name.  
|              |                     | 2. Speaks enthusiastically about a movie. | 1. Employee has reputation of being shy  
|              | Low Constraint      | Non-Constraint    | 2. Employee looks away from target akwardly |
|              |                     | 1. Employees has reputation of being friendly.  
|              |                     |                   | 2. Employee smiles at target. |
|              | High Constraint     | Negative          | Constraint (Job Demands work)          |
|              |                     | 1. Looks away from employee.  
|              |                     | 2. Ignores employee.  
|              | Low Constraint      | Constraint        | 1. Employee has reputation of being shy  
|              |                     |                   | 2. Employee looks away from target akwardly |
|              |                     | (Employee Reputation) | 1. Employee has reputation of being shy  
|              |                     |                   | 2. Employee looks away from target akwardly |
## APPENDIX 3
### EXAMPLES OF AGREEABleness VIGNETTES

<table>
<thead>
<tr>
<th></th>
<th>Positive Trait Expression</th>
<th>Negative Trait Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Constraint</strong></td>
<td>Allison picks up off her desk a resume from Sarah. Sarah is a former employee who had previously quit the store to go back to school. When Sarah last worked at the store, she had a reputation of talking back to Allison and some of the managers. Allison makes a note to herself to phone Sarah back to schedule a job interview.</td>
<td>Allison picks up a note from Tanya, who has a reputation of talking back to Allison and some of the other managers. Tanya’s note explains that during yesterday’s storewide sale, she accidently priced many items at sale prices that should have been sold at regular price. Allison writes the following message and places it in Tanya’s mailbox. “Tanya, this seems like a really stupid mistake. Please come see me during your next shift to tell me what you are going to do in the future to avoid this from happening again.”</td>
</tr>
<tr>
<td><strong>Low Constraint</strong></td>
<td>Allison picks up off her desk a resume from Sarah. Sarah is a former employee who had previously quit the store to go back to school. When Sarah last worked at the store, she was a top-performing employee. Allison makes a note to herself to phone Sarah back to schedule a job interview.</td>
<td>Allison picks up a note from Tanya. Tanya’s note explains that during yesterday’s storewide sale, she accidently priced many new items at clearance sale prices. Tanya has twice been disciplined by another manager for marking down the price of products and selling them to her friends. Allison writes the following message and places it in Tanya’s mailbox. “Tanya, this seems like a really stupid mistake. Please come see me during your next shift to tell me what you are going to do in the future to avoid this from happening again.”</td>
</tr>
</tbody>
</table>
### APPENDIX 4

**EXAMPLES OF EXTRAVERSION VIGNETTES**

<table>
<thead>
<tr>
<th></th>
<th>Positive Trait Expression</th>
<th>Negative Trait Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Constraint</strong></td>
<td>Kelly is the oldest employee in the store, who tends to keep to herself and not say much to the other employees and managers. She is working at putting together an exercise bike for display. Jane is walking by Kelly when she says jokingly “My workout is long overdue – hurry up and fix this bike Kelly so I can get on it and shed some pounds.”</td>
<td>Jane is working with Natalie sorting through a new shipment of running shoes. Both Nathalie and Jane are rushing to get the shipment stocked before the store opens. Jane is in charge of reading the packing slip, and throughout this job she remains quiet. Once the shipment is put away Jane says to Nathalie, “sorry I’m not saying much today, I’ve got a headache”.</td>
</tr>
<tr>
<td><strong>Low Constraint</strong></td>
<td>Kelly is an employee who is known for her good sense of humor. She is good friends with Jane, as well as many of the other employees and managers. She is working at putting together an exercise bike for display. Jane is walking by Kelly when she says jokingly “My workout is long overdue – hurry up and fix this bike Kelly so I can get on it and shed some pounds.”</td>
<td>Natalie is the oldest employee in the store, who tends to keep to herself and not say much to the other employees and managers Jane is working with Natalie sorting through a new shipment of running shoes. Natalie starts talking about which shoes she prefers for running. Jane remains quiet. Once the shipment is put away Jane says to Nathalie, “sorry I’m not saying much today, I’ve got a headache”.</td>
</tr>
</tbody>
</table>
Houston, We Have a Problem Solving Model for Training

Lynne Martin  
San Jose State University Foundation, NASA Ames Research Center

William O'Keefe  
United Space Alliance, NASA Johnson Space Center

Lacey Schmidt  
EASI/Wyle, NASA Johnson Space Center

Immanuel Barshi  
NASA Ames Research Center

Robert Mauro  
Decision Research

Like many organizations, NASA needs to efficiently train new employees to effectively handle a variety of complex situations. We describe how a model of problem solving for flight controllers was built through combining data, a number of decision models already in existence, and expertise. We then describe how the model was used to drive the construction of a new decision-making training program, containing both lessons (directed instruction) and different levels of simulated exercises (focused practice), that will be more efficient and as or more effective than previous training.

The Mission Operations Directorate (MOD) of the National Aeronautics and Space Administration’s (NASA) Johnson Space Center (JSC) provides continuous operations support for the International Space Station (ISS). One component of that support is the Flight Controllers who monitor, command, and respond to the vehicle, crew, and ground equipment associated with the ISS. Each Flight Controller continuously monitors one or more ISS systems using computer console displays. The flight controllers require advanced problem solving skills as well as a thorough understanding of the technical complexities of the system(s) for which they are responsible. Traditionally, problem solving on-console has been learned through scores of expensive simulations and years of on-the-job training watching other flight controllers. While simulations and job shadowing can be effective ways to learn how to perform the flight control function, there are many reasons why obtaining decision making and problem solving expertise through this strategy alone is not efficient, or necessarily successful. The average certification times for flight controllers prior to 2008 spanned from 18 months to three years. Flight controllers sometimes participated in more than 50 eight-hour full-mission (i.e., multi-system, integrated) simulations before becoming certified. Running these simulations proved very costly in terms of both facility costs and labor
hours (Baldwin, 2008). The Missions Operations Directorate, which is responsible for technical training, was eager to develop creative solutions that would increase training efficiency and reduce training time to 12 months.

In late 2006, NASA MOD began looking at ways to increase efficiency in the training flows for ISS Flight Controllers. They approached this in two ways: firstly splitting the training into two phases, separated by a period of working as a flight controller under specific (low risk) conditions; and secondly, by redesigning both phases of the training so that, ultimately, new trainees would gain proficiency with far fewer lessons and far fewer training simulations than their predecessors.

The two phases of training were intended to take approximately two years in total – just over a year for the first phase and six months for the second. The first phase of the training introduces basic technical knowledge and Space Flight Resource Management (SFRM) skills, such as decision making and teamwork that are practiced in some desktop simulation sessions and discipline-specific simulations and in approximately eight full-mission simulations. The Flight Controller graduates from this phase as an “Operator” who is qualified to handle quiescent operations only. The second phase of the training takes place a year or so later and introduces more advanced technical and SFRM skills, again focused on decision making, that are practiced in discipline-specific simulations, and four to five full-mission simulations. The Flight Controller graduates from this phase as a “Specialist” who is fully qualified to handle any level and type of operation in his/her technical area(s). Given the complexities of the operation, the number of simulations and amount of training could not just be reduced. The revised certification program had to be designed so that by completing each segment, trainees would add definable new skills to their repertoire.

This is one case in which research supports management’s wishes. Empirical findings suggest that task specific training in decision making together with practice in a variety of problem presentations is more important for helping trainees learn to generate quality solutions to novel problems than encountering a large number of full-mission simulations (Baldwin, 1992; Bottger & Yetton, 1987; Ganster, Williams, & Poppler, 1991; Salas & Klein, 2001). Thus, the training program could be changed, replacing much of the on-the-job learning-by-example with directed instruction and focused practice. By providing trainees with an appropriate structure that they could begin to use immediately to organize their experiences, coupled with focused simulation sessions – where decision processes were specifically briefed, practiced and debriefed – training-to-certification time has been reduced substantially.

THE PROBLEM WITH DECISION MAKING MODELS IN TRAINING

Even a brief review of the decision making literature reveals that there are many generic decision making models, with still more that have been specifically crafted for particular domains (see, e.g., Salas & Klein, 2001). General models range from optimizing approaches (Simon, 1979) to the real-world driven sequences of Recognition-Primed Decision Making (Klein, 1989) and the codified strategies put in place by organizations (see, e.g., Mauro, Barshi, Pederson & Bruininks, 2001). No one strategy works for all instances or all levels of skill. The right strategy depends on the type of decision needed, environmental conditions, experience with that problem, whether the solution is prescribed or needs to be developed, time available, etc. (Mauro, et al., 2001). Many models incorporate some of these different aspects at different times or in different ways that all seem applicable to problem solving in mission control. Moreover, much of the literature on training problem solving expertise has focused on what such expertise looks like and on how to certify that a student has reached that point, rather than on how to help trainees obtain this expertise efficiently (Neal, Godley, Kirkpatrick, Dewsnap, Joung, & Hesketh, 2006).

Research articles describing problem solving and decision making models have one suggestion in common about how to develop expertise through training: provide an attentional or metacognitive model for trainees to use as a structure for their experiences (Cooke, Gorman, Duran, & Taylor, 2007; Day, Arthur, & Gettman, 2001; Ericsson & Williams, 2007; Ford, Smith, Weissbein, Gully, & Salas, 1998; Mesmer-Magnus, & Viswesvaran, 2008; Neal, et al., 2006). It is important to chart and represent the high level mental processes that experts implicitly use to solve problems so that this knowledge can be...
explicitly trained. To this end, NASA’s MOD decided to build a context specific model of problem solving and decision making that could drive the re-structuring of the flight controller training program to make it more directed, and hence efficient.

A working group consisting of experienced flight controllers, instructors, I-O psychologists, and human factors scientists was formed to develop a model of flight controller decision making and, from this, a new training program. This paper outlines the process of developing and verifying this context specific problem solving and decision making model and the way the model was used to drive the content and structure of a new flight controller problem solving training program.

**REQUIREMENTS FOR A MISSION CONTROL DECISION MAKING MODEL**

Mission Control is an unusual environment. Routine mundane housekeeping chores can become time-critical safety-related operations due to the extreme conditions in which the Space Station operates. As a result, existing decision models did not provide complete maps of flight controllers’ decision making strategies. For example, in space operations time is often a critical factor. Time becomes an overarching consideration in many more decisions than it does in other environments. A solution that cannot be implemented in time is useless. Thus, a controller may decide to switch goals in midstream from finding a way to return a system to full operation to finding a way to shut it down safely – simply because the estimated time available to solve the problem and implement the solution is greater than the estimated time before a critical condition would develop.

To ensure that operations are safe and predictable, Mission Control relies heavily on processes and procedures that have been developed and tested over the fifty-five years that the space program has been in existence. Reliable solutions are preferred over potentially quicker but less predictable ideas. Thus, the organization leans heavily toward a codified (i.e., rule based; Rasmussen, 1983), approach to decision making as often as possible. In rule-based decision making, the conditions that trigger a prescribed solution and the procedures to be followed to carry out that solution are clearly specified. In Mission Control, previous decisions and solutions are codified in “Flight Rules.”

However, space flight is still a relatively new domain. Problems frequently arise for which there is no previously defined solution. In these situations, even experts are forced to use other decision strategies. In such situations, a key step is recognizing that one is moving out of a situation in which rule based decision making can help solve the problem into a situation in which a different strategy is needed. Any model of decision making that is designed to guide flight controller training must incorporate steps that help trainees to recognize this key turning point and assist them to move smoothly from a decision strategy that relies on using rules to other decision making strategies.

To train flight controllers to be expert decision makers within the mission control environment, a model of decision making had to be developed that accurately reflects the complexity of the flight controller decision process. This model had to incorporate the time critical nature of many ISS decisions and it had to reflect the controllers’ needs to use different decision strategies appropriate for the type of problem encountered. Based on these requirements, a description of expert controller decision making was developed that incorporated a step-by-step model containing generic problem-independent steps that could move the trainee through a problem solving process that covered all the crucial steps to a successful solution.

**MODEL DEVELOPMENT**

To create a model that accurately reflected flight controller decision making, the working group studied real events from the flight controller’s perspective and reviewed general decision making models to identify frameworks that closely mapped flight controllers’ processes. The MOD working group approached the task of constructing a decision making model in four steps: 1) describe the general mission control decision process by extracting general phases from accounts of actual events; 2) structure the decision process description through reference to established models; 3) cross check the resulting
model with other established decision models; and 4) verify the model by working back through the available event data.

**Describing Decision Making**

The working group began by collecting data about a number of ISS-related events that had occurred in the Mission Control Center. Eight interviews were conducted with personnel who had been key players in the events that they described. The eight participants were senior ISS or Shuttle Flight Controllers who were in charge of different operational systems. Demographics were not collected, but from those who volunteered information, the approximate average time as a flight controller was five to six years at the time of the interview.

A team of three interviewers (who were members of the working group) conducted cognitive interviews (Fisher & Geiselman, 1992) with experienced Flight Controllers. Prior to the interviews, interviewees were asked to think of two or three events that occurred while they were on-console that were not easily solved and required problem solving and decision making skills. The interviews lasted for approximately two hours each. During this time, the interviewers encouraged the participants to share their stories and asked open-ended questions to probe either for more detail or for participants’ opinions of how they developed expertise. Notes were taken during the interview and digital recordings of a portion of each interview were made.

**Initial Model Development**

Prior to examining the interviews, the working group identified six key problem solving skills:

- Recognizing and confirming the situation
- Determining indirect and direct impacts to the system, vehicle, crew and mission
- Determining time constraints
- Determining goal(s)
- Developing and evaluating options
- Planning and implementing a plan.

Through expert discussion during two workshops and by analyzing the interviewers’ notes from the Flight Controller interviews, the working group expanded upon these six steps to develop an initial version of the “Solving Problems In Complex Environments” (SPICE) model. In a brainstorming process, they assessed and combined steps and ideas from well-known models, their in-house training flows, and their assessment of the eight expert-interviews. The resulting SPICE model was represented both through a verbal description and through a flow diagram (see Barshi & Mauro, 2009, for more details).

**Cross Checking**

Given the relatively small number of interviews and the unusual operation, the working group took steps to ensure that important steps in the flight controller decision process had not been missed. The working group compared the model to other models including the FOR-DEC model (Hörmann, 1995) used by the ISS Expedition Behavioral Health and Performance Working Group; the ISS SFRM Operator learning objectives and skills compiled during an internal training needs analysis; the DECIDE model (Benner, 1975) used by the US Army; and, the STAR (Stop-Think-Act-Review) model taught in the ISS SFRM training flow (derived from the training program of the Callaway Nuclear Power Plant, see Baldwin, 2008).

Like the SPICE model, these four decision making models are step or flow models that describe a method for decision making, but can be used as a series of steps to assist a decision maker through the process. However, the SPICE model encompasses a number of different strategies, and the flow shifts between these strategies. This blend of strategies arose as a direct result of focusing on real world events and building a model that reflected the successful processes that are followed rather than attempting to define an optimal strategy or derive a model based on a single perspective.
Verification for the SPICE Model

To verify that the SPICE model accurately and completely captured the decision-making processes followed by experienced flight controllers, the model was used to categorize the decision making steps described by the interviewees (see above). Transcripts of the digital recordings made of a portion of seven of the eight interview sessions were coded. When necessary, the interviewers’ notes were used as a secondary data source. The digital recordings captured twelve event descriptions, which were used for the analysis.

Two comparisons were undertaken, firstly how many steps of each event could be described or labeled by a step in the model and, secondly, how many of the 22 steps in the model were required to account for each event. When all the model’s descriptors were considered, the model could account for all of the steps described in the twelve events recounted by participants. Secondly, the average number of SPICE model steps used to describe each event was 12.67 – over half of the steps available. The number of steps utilized ranged from 9 to 17 (40.9% to 77.2% of the model). However, event steps could only be identified if a participant talked about them. So, these values probably underestimate the number of steps taken. The Flight Controllers may have engaged in more of the model steps but failed to mention them explicitly during the interviews.

It was not possible to ascertain whether the steps of the model were in the right order. The participants recounted their experiences in a free-form manner making it difficult to determine the exact chronology of events. However, the cyclical pattern depicted in the SPICE model was apparent in the described events. Participants often related that they and their team worked through a problem to a point at which it became evident that a chosen course of action was not going to work. Then the team cycled back to a much earlier point in their decision making process and began to work through the problem again with a fresh approach (sometimes bringing in other teams or experts). In other cases, the controllers would reach an interim goal and then cycle back to begin work on a subsequent goal.

On the basis of this retrospective analysis, three changes were made to the SPICE model:

- Labeling was updated in the flow diagram.
- Some of the steps at the beginning of the second stage of the model were reorganized.
- A return loop was included that links the second stage of the model back to the middle or beginning of the first stage.

These recommendations and suggestions are included in Figure 1, which is a revised version of the original SPICE model flow diagram. The SPICE model has explanatory and descriptive value. If a problem is relatively straightforward, the flight controller could solve it by working through the model once from beginning to end. With more complex problems, multiple cycles may be required.
FIGURE 1
ISS MISSION CONTROL SOLVING PROBLEMS IN COMPLEX ENVIRONMENTS (SPICE) MODEL
EXTRACTING MODEL ELEMENTS FOR THE TRAINING PROGRAM

At this point, the challenge for the MOD working group was to convert the model into effective material for a problem solving training program. Decision making models can be difficult to apply because: 1) they are necessarily abstract and 2) they are often perceived to be rigid, requiring each step to be followed in order.

Using Abstract Models

People find it hard to think about how they think. An abstract model is often difficult to utilize because trainees cannot apply the general model to the situation in front of them. Helping a student to label the processes and steps in their decision making allows them to make connections between their situation and the model. One way to achieve these connections is to convert the passive labels in the model to actions that can be taken by the trainee, almost creating a “to-do” list of steps to take during an event. To achieve this conversion, Mission Control training developers and other subject matter experts advocated framing the key steps of the SPICE model as general questions that an Operator flight controller could use on-console to prepare for, or evaluate, problem-solving actions.

Emphasizing Flexibility

Users of decision models often believe that the decision process will only work if all the model steps are followed and followed in the order that they are diagrammed. However, real world constraints may interfere so that a step cannot be completed until more information is available or some other condition is met. In a time critical environment, like Mission Control, it is often better to begin working on another step than to wait until all prior steps are completed. Furthermore, not all steps are always required. As the primary goal was to teach a generalized and shared problem solving strategy broadly applicable to the technical context of spaceflight operations, a presentation technique that emphasized the elements of the model rather than its flow was desired. For these reasons, a card sorting exercise was developed.

GENERATING THE MATERIALS TO INTRODUCE A PROBLEM SOLVING FRAMEWORK

To construct lesson materials and lesson plans, the lead training developer used the model, the notes from the interviews (discussed above), his own expertise, and knowledge of the information Flight Directors require from Flight Controllers during an event. Flight Directors orchestrate all activities at the Mission Control Center, and constructing the training around the information they need allowed the lead training developer to ‘operationalize’ the steps of the SPICE model. He re-phrased the list of problem steps as a list of operational questions that, when answered, can drive a problem solving process. He then combined and removed questions to reduce this list to only the most important questions from a decision making perspective, leaving 17 key questions that focused on the information gathering and manipulation required to understand and solve a problem at the flight controller level (See Figure 2).

The 17 questions are couched at a different level of abstraction from the SPICE model. They guide the students to consciously consider whether they know what the problem is, encouraging the “thought before action” that is emphasized in the STAR model (Question 1, Figure 2). While initial questions in the list focus on safety and factors that need to be immediately weighed and acted upon to prevent a rapid worsening of the situation (e.g., Q2, Q3), later questions encourage the student to view the problem from a wider perspective and to actively consider additional costs, benefits, and potential risks and to check over the work that has been done (e.g., Q13, Q16).

The 17 questions were then used to form a summary sheet that covers all the main points of the lesson, and serves as the students’ study guide. The first side of the summary sheet includes only the 17 questions (as shown in Figure 2) and is intended to fit into the personal notebook that many Flight Controllers keep to use as a quick reference when on-console in Mission Control. The back-side of the sheet is a (more detailed but not all inclusive) listing of the factors that a flight controller needs to consider to properly answer these 17 questions. For example, in order to answer the sixth question about
the amount of time until an effect, the controller would need to know system, vehicle, mission, process, environmental and timeline factors.

**FIGURE 2**

THE “17 QUESTIONS” – DECISION MAKING PROMPTS

<table>
<thead>
<tr>
<th>Failure</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Can you recognize and (dis)confirm the failure?</td>
<td>2. Any immediate crew actions required for safety?</td>
</tr>
<tr>
<td>3. What functionality/capability has been affected?</td>
<td>4. What are the immediate impacts?</td>
</tr>
<tr>
<td>5. What are the near-future impacts?</td>
<td>6. What are the Times-to-Effect?</td>
</tr>
<tr>
<td>7. What are the critical circumstances?</td>
<td>8. How have you checked your assessment?</td>
</tr>
<tr>
<td>9. What is your immediate goal?</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Workarounds</td>
<td></td>
</tr>
<tr>
<td>10. Is there an existing course of action?</td>
<td></td>
</tr>
<tr>
<td>11. What are the options?</td>
<td></td>
</tr>
<tr>
<td>12. What are the risks of each option?</td>
<td></td>
</tr>
<tr>
<td>13. What are the Benefit/Cost/Risk trades?</td>
<td></td>
</tr>
<tr>
<td>14. What is your contingency plan?</td>
<td></td>
</tr>
<tr>
<td>15. What is your Plan of Action?</td>
<td></td>
</tr>
<tr>
<td>16. How have you checked your plan?</td>
<td></td>
</tr>
<tr>
<td>17. What is your next goal?</td>
<td></td>
</tr>
</tbody>
</table>

The summary sheet was reviewed by experienced Senior Flight Controllers and a Flight Director, and modified accordingly. One of the most important modifications was to group (or pre-sort) the 17 questions into the accepted structure flight controllers typically use to communicate information to the Flight Director. This structure involves arranging message content to address three main points: the observed Failure (F), the expected Impact (I) of this failure, and the Flight Controller’s recommended solution or Workaround (W; a way to solve the problem or work around the failure). The first question addresses the Failure (F) aspect of the FIW communication structure, questions number two through nine address the Impact (I) aspect, and questions number ten through seventeen address the Workaround (W) aspect (Figure 2).

To introduce these 17 questions in the classroom and to promote the desired discussion about common problem solving issues, a card sorting exercise was developed from this material. Card sort exercises (see Canter, Brown & Groat, 1985) are a good way to demonstrate to a group that different constructs can be applied to elements of complex situations. Students can easily sort and re-group key problem solving steps for themselves when given different categories that are drawn from relevant events. By running the card sort in a group setting, such as a class, the students can experience how people can take different approaches but still reach acceptable solutions as long as they consider all the key elements of the problem. This kind of exercise, in which students are guided in an exploration of critical aspects, is useful in helping trainees develop common mental frameworks for problem solving (Berardi-Coletta, Buyer, Dominowski, & Relinger, 1995).

One question was placed on each of 17 cards to form a set. In the exercise, small groups of students are given a set of cards and asked to sort the cards into three piles that are labeled “Failure,” “Impact” and “Workaround.” Through this exercise the students begin to develop their own mental models of problem
solving that map closely with those of other trainees and with the SPICE model. This exercise also helps students to see how they could apply these questions to real-world problems by linking them to the commonly used FIW structure.

DEVELOPING THE DECISION MAKING TRAINING LESSONS

The card sort is only the first exercise in a series of Space Flight Resource Management exercises developed for the Operator and Specialist training. A full lesson plan was developed around the SPICE model. In this lesson, students are encouraged to “actively explore” their own decision processes in a manner similar to the approach that was taken in developing the SPICE model. Active exploration is a method that has been advocated for aviation training for some time.

Training in aeronautical decision-making (e.g., Jensen, 1989; Kanki, Helmreich & Anca, 2010; O’Hare, 1992) has received considerably more attention than mission control decision training. Aviation is similar to spaceflight in many ways. Both rely upon highly technical systems; decisions are often made under time pressure; and there are many codified procedures. Hence, it is possible that principles advocated for training aeronautical decision making may be also well-suited to training flight controller decision making. Robertson (2004) stresses that pilots need to be taught higher order thinking skills so that they can develop judgment and decision making techniques. He emphasizes using training strategies that will help trainees develop such cognitive skills. Landa (1999) suggests that learners have to be actively engaged in mental activities to promote effective learning. He suggests using focused practice and directed instruction techniques to actively engage learners. Others advocate basing training on goal-derived and technical task context as well as the metacognitive and shared mental models used by experts (Ganster, Williams, & Poppler 1991; Hartel and Hartel 1997; Chrysikou 2006).

Basing methods “on real world problems, student-centered, active learning” (Robertson, 2004, p 204) as well as customizing them to the domain is likely to help trainees understand and apply the training material. Hence, training developers decided to engage students in case study exercises as part of training the problem solving model.

The lesson plan followed from these basic tenets. The training begins with the card sort exercise (described above) that introduces key decision processes as questions that are immediately situated in the mission control domain. Then the students begin to apply the 17 questions first to simple then to more complicated real world problems. Meanwhile the students are encouraged to discuss the problems to see how using the questions at different points in problem solving can lead to alternate acceptable solutions. Using a variety of different scenarios enables the students to understand the importance of flexibility in the decision process, as well as anchoring the learning in tangible and relevant event sequences.

Lessons were developed for the Operator level of flight controllers first, because the need for improved problem solving skills was noted in earlier operator classes. The second part of the operator lesson (following the card sort) consists of case study exercises. The lesson is designed to be given just prior to a simulation in which there will be a major malfunction. In the simulation, the students must ask and answer the 17 questions to properly solve the problem. An advanced case study lesson was also developed for the Specialist level of flight controllers to be taken when an Operator upgrades to Specialist. This lesson assumes that a Specialist will have to deal with unique problems that are more complex and ambiguous than those addressed by Operators.

The exercises used in the problem solving lessons were designed to mirror real problems seen in-flight and to be applicable to all the different flight control positions. The exercises were also designed to emphasize problems for which there was no approved solution. Hence, the various student teams can develop different answers based on how they perceive mission priorities and how they assess risks.

To work through an exercise, the students first read an account of an event, which contains all the relevant contextual information (e.g., what was happening, system and mission status, constraints, etc.) and a description of what the flight control team that was on-console at the time did. To help facilitate the learning of a common framework for problem solving, the students are then asked to determine when the flight control team asked each of the 17 questions and to mark these points on the case study by writing
the appropriate question label in the margin of the case study description next to the relevant communication (e.g., noting ‘Contingency’ next to the part of the dialogue that shows information relevant to question number 14). The case studies were selected to showcase all 17 questions, but to vary the order that they are asked and answered. In the real world this “asking process” is cyclical, with some questions re-asked and re-answered several times when new information is available.

Each exercise ends with the students (in groups of three to four) making their simulated FIW calls to a Flight Director. As each call is made, the students discuss how they considered each of the 17 questions in composing their calls, and which answer to which question(s) drove them to the specific workaround recommendation they gave in their simulated call. Finally, students are guided to discuss how the questions helped them determine what information they needed and how solving real problems (like those discussed in the case study exercises) is more complex than simply following through the seventeen questions in order.

VALIDATING THE TRAINING APPROACH

As in many organizations, we have yet to collect sufficient data to validate this training program via traditional training evaluation models (c.f. Kirkpatrick, 1979). However, some operational evidence of training validity and utility has been collected. Both the material (the 17 questions) and the facilitated instructional style were vetted through a series of dry-runs and a certification run in which multiple groups of technical, operational, human factors, and I-O psychology subject matter experts reviewed the lesson. During the dry-runs, the lesson received high marks from certified Operators, Specialists, and their management. Additionally, the Specialist version of the lesson has been taught to the first class of students and student responses indicated the lesson was interesting and valuable to them. Pending the required resources (e.g., time, money, management support for data collection), we hope to examine transfer of training more quantitatively. The current lesson is designed to be given after a few initial simulations but just prior to a more complex simulation in which there will be a major malfunction. We are interested in examining whether Operator students who have received the problem solving training respond to this major malfunction simulation more successfully than a control group.

CONCLUSIONS

We described the development and use of a specific problem solving model designed to provide the framework from which to develop a training course. Using models to drive training is not a novel approach, but bridging the gap between theory and practice is hard to achieve. The SPICE model has been a useful guide to keep the lesson plan on-topic – an important property, as limits on time and available resources were key drivers for the requirement to revise the training program. The model itself offers a framework to guide students’ exploration and learning of key steps in mission control decision making, but also has potential as a frame for describing real-world events and for investigating decision processes in more detail. However, translating the model from a series of charted steps to an operationally relevant training course, which emphasizes a series of factors that are key to successful decision making but are not context specific, was the crux of the problem for the training developers. The development of 17 practically phrased questions that seem relevant and reasonable to trainees allowed a training program to be created from the SPICE model. This experience suggests that by developing a context specific problem solving model and designing technical training that includes the explicit and practical sharing of that model an organization can better prepare its personnel to solve complex problems in the operational environment.

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Recent evidence consistently shows that corporate performance has an important effect on job satisfaction. This study aims to contribute further to this novel field of research by examining the relationship between corporate performance and job satisfaction in a longitudinal study. Results show that corporate performance is associated with job satisfaction. The study discusses the importance of corporate performance as a control variable in current HR – Attitude studies. The connection of job satisfaction with HR practices is also discussed. Future research questions are proposed.

The area of research in HR practices and employee attitudes has not received its fair share of research over the years. However, recent studies have attempted to fill this gap by investigating the impact of HR practices on employee attitudes (e.g. Guest and Conway 1998, Macky and Boxall, 2007; Edgar and Geare, 2005; Petrescu and Simmons, 2008; Steijn, 2004; Kalmi and Kauhanen, 2008; Ting, 1997). The underlying argument is that HR practices are associated with job satisfaction, and hence better organizational performance as a result. Indeed, this view may not be surprising given that modern HR practices (Applebaum, et al., 2000) are grounded in principles and theories relating to employee motivation and satisfaction (Schein, 1980). A recent meta-analysis has shown that job satisfaction is related to performance (Judge et al., 2001). HR policies, which unquestionably affect the lives of employees at the workplace, are indeed expected to be a key drive of job satisfaction.

A number of recent studies have established statistically that HR policies are in fact associated with better attitudes (Macky and Boxall, 2007; Ting, 1997). For example, Guest (2002) found that one HR practice, the deliberate attempt to make jobs as interesting and varied is strongly and consistently associated with higher work satisfaction across the four business sectors that were investigated. In addition, across the sample as whole other types of HR practices were also associated with higher job satisfaction. These are keeping people well informed about developments, equal opportunities, practices to limit harassment at work and family friendly policies. On the other hand other HR practices such as performance-related pay and training and development, employee involvement activities, filling vacancies from inside, and a stated policy of avoiding compulsory redundancies were not associated with employee satisfaction. However, it should be worth to note that results have been highly inconsistent across the studies; the same HR practices that correlate with job satisfaction in some studies would fail in other studies (see Harley, 2002). Future research is clearly needed in this area.
CORPORATE PERFORMANCE AS CONTROL VARIABLE

Current HR studies which investigate the impact of HR practices on job satisfaction rightly control for a number of important personal and organizational background variables such as age, education level, marital status, number of children, ethnic minority, tenure, union membership, hours worked, work status, in addition to organization size and sector. It is widely accepted that including control variables is highly important for reliable statistical results. Said differently, neglecting significant control variables in a model may lead to spurious statistical correlation (Yaffee, 2003). Indeed, in current HR-attitude studies (Guest, 2002; Guest and Conway, 1998; Macky and Boxall, 2007), the authors do include several control variables in their models. However, according to my review of the literature, none of the HR-attitude studies include corporate performance as a control variable.

Recent studies have shown that corporate performance has a significant impact on job satisfaction (Schneider, et al., 2003; Harter et al., 2002). The work by Marchington, Wilkinson, Ackers, and Goodman (1994) is worth citing in this regard. In their post analysis of data previously collected as part of a case-study project on worker participation at the workplace in 25 organizations in UK in the period from 1989 to 1991, Marchington and his colleagues (1994) inferred from the worker interviews that that employees’ general attitudes towards their organization seemed to reflect the current financial standing of their organization. In specific, comparing employee interview responses from a sample of six organizations, it was concluded from their work that employee attitudes seemed to be mostly positive in those organizations that were experiencing profits, while employee attitudes in organizations that were experiencing financial difficulties were mostly negative. This was true regardless of the fact that all six organizations examined had a similar management style. Based on what has been said, this suggests that employee attitudes seem to be influenced by the state of corporate performance (i.e. positive financial performance tends to affect employee satisfaction positively, while organizations with negative corporate performance may have the opposite effect on attitudes) as the work of Marchington and his colleagues demonstrate in their review in the area of worker participation. In fact, a recent study by Tsai et al. (2010) who gathered data from employee surveys and management interviews in 32 companies revealed that companies with better business performance had more positive attitudes (overall perceptions of work, job autonomy and the perceived link between reward and performance). Yet another important study by Schneider et al (2003) who analyzed archival data from 35 US corporations over multiple time periods showed that overall job satisfaction was actually caused by financial performance (ROA and EPS), rather than the opposite.

Extending the findings above to the human resource management surveys which statistically explore the effects of HR practices on employee attitudes (job satisfaction), corporate performance may well stand to be a potentially important control variable. In light of the recent studies that demonstrate the impact of corporate performance on job satisfaction (Schneider, et al., 2003), it follows that by failing to include corporate performance as a control variable in HR-attitude studies (e.g. Guest, 2002), erroneous statistical results may occur (Yaffee, 2003). However, given the very small amount of research in this area, more research is needed to boost confidence of our claims that corporate performance has an impact on job satisfaction.

In sum, there is a very small but growing body of evidence which shows directly, or indirectly, the impact of corporate performance on employee attitudes (Ryan et al. 1996; Harter et al., 2002). Further, to my knowledge, only two publications have explicitly examined the relationship (Schneider et al., 2003; Tsai et al., 2010). In fact, Tsai et al (2010) is probably the only publication that looks at this from an HR perspective (however, see Ismail, 2006 for the first, unpublished, study). Consistent with the arguments of those authors, there is clearly a need for further research in this area. This study aims to contribute further to this body of knowledge by explicitly researching the effects of corporate performance on job satisfaction. In addition, this paper adds to the previous studies in a number of ways. Firstly, to my knowledge, this work is the first true longitudinal research which explores the relationship between performance and job satisfaction from an HR perspective. In line with Tsai et al. (2010), there is a real need for a longitudinal study in this field. This study studies job satisfaction explicitly, while the previous
study measured general attitudes towards various aspects of work. Further, whereas Schneider et al., (2003) study follows a longitudinal logic, however, the fact that they analyzed data from a pre-existing dataset with no information on the procedures used during the surveys may limit their generalizations as the authors claim. In addition, their study was not focused on HR, but concerns itself with the general OB discipline. An additional strength of this study is that it relies on employees views (Mabey, et al., 1998). One major gap in the HR literature is that studies which examine employee responses are ironically based on management accounts (Legge, 1995). Finally, the study focuses on the services sector, namely the hospitality sector, which has received less attention in the HR literature.

HYPOTHESIS AND METHODOLOGY

According to the argument above, the main hypothesis for this study is as follows:

\[ H1: \text{Positive financial performance is associated with higher job satisfaction} \]
\[ H2: \text{Negative financial performance is associated with lower job satisfaction} \]

Although HRM is assumed to be highly related to job satisfaction theoretically (Tomer, 2001; Guest 1987), results of studies show that the relationship is weak and highly inconsistent (Harley, 2002). The latter is unsurprising given the fact the HRM remain largely rhetoric (Harley and Hardy, 2004; Truss, 1999; Hallier and Leopold 1996; see also Legge, 1995; Marchington and Grugulis, 2000). In other words, although it is largely held that HR practices related to rewards, training, and job design are supposed to have a high impact on job satisfaction, however many organization do not seem to implement them seriously as research shows. Therefore, it is proposed that the presence of HR practices in the organizations studied here will not maintain positive job satisfaction in a context characterized by low financial performance given that they may not be fully applied after all.

Data was collected as part of a PhD thesis (Ismail, 2006) in the year of 2004. The study was based on the hospitality sector, and in particular the international luxury hotel chains based in the country of Lebanon. A total of 5 international hotel chains had participated in this study, representing nearly 60% of all international hotel chains present in Lebanon (as of 2004). A total of 436 employees had participated in this study, representing an 18% overall response rate. The hotel sector offered two methodological advantages to this study. First, the fact that hotels tend to experience the seasonality phenomenon offered a valid ground to test the main hypothesis whether corporate performance is associated with employee attitudes or not. In other words, occupancy rate falls sharply in certain months is some hotels which results in a low financial performance, and the opposite is true in the other months. Secondly, international hotel chains, and luxury chains in particular are presumed to follow best practice HR (Hoque, 1999) and hence allows us to explore our hypothesis in an HRM oriented organization. The study follows a repeated measure design which represents the main methodological strength of this study (Field, 2004), in contrast to cross-sectional studies which may limit causality links. In three out of the five hotels (Hotels A, B, and C), employees were surveyed twice, with a snapshot study of the two other international hotels (Hotels D and E) which serve as control groups to control for order-effects (Howell, 1999) which may be typical to repeated measure designs (Field, 2004).

Corporate Performance

Following interviews with hotel managers, it was agreed that the months of July and August reflected the hotels’ highest corporate financial performance periods at 85%+ occupancy rate, or high season, while the months of September, October, and November represented their low season where occupancy rate fall short of 50% (low financial performance). Hard financial information was not accessible. An occupancy rate known to the hospitality industry was used as a measure of corporate performance. For example, what is the current occupancy rate in the hotel.
HR Practices
The presence of HR practices was measured via an HR checklist that has been widely used in the British IPD studies (Patterson, et al., 1997; Guest and Conway, 1998). It measured responses to 10 HR practices with a “yes”, or “no” responses. Item examples include, “keeps employees well informed”, and “tries to make jobs as interesting as possible.” The questionnaires were distributed on the spot to hotel managers to verify the presence of HR practices in their hotels.

Job Satisfaction
Employee attitudes, or job satisfaction in particular, was measured with two general satisfaction measures: the Faces scale (Kunin, 1955), a single-item global scale; and the Overall Job Satisfaction scale (Cammann, et al., 1982), a multiple-item global scale. Both are facet-free satisfaction scales measuring overall job satisfaction to one’s job and have been used in a number of studies with success (Fisher, 2000; Weiss et al., 1999; Tekleab and Taylor, 2003; Kickul et al., 2002). The Faces scale (Kunin, 1955) is a single-item measure made of 11 faces where subjects would choose the face that best describes how they feel about their job in general. The satisfaction score for each individual is the value corresponding to the face chosen, starting with the saddest face equals 11, while the happiest face equals 1. The average score of the whole sample would be the sum of the values divided by the number of respondents, with a lower score representing higher job satisfaction. The Overall Job Satisfaction scale (Cammann, et al., 1982) is a three-item scale global satisfaction scale. Responses are on a seven-point dimension (1= Strongly disagree to 7=Strongly agree), and the mean value across items (with one reverse-scored) constitutes the scale score (see Cook et al., 1981). A higher mean indicates higher job satisfaction.

A test-retest correlation of .78 was obtained for the Faces measure (Kunin, 1955) over a two-week interval showing good reliability. Moreover, according to Cammann, Fichman, Jenkins and Klesh (1979) (cited in Cook et al., 1981) the Overall Job Satisfaction scale has good internal consistency, with a Cronbach alpha of .77. With respect to this study the Cronbach alpha obtained was .89.

Procedures
In the three hotels (A, B, and C), more than 500 questionnaires were distributed to employees in each of these hotels in mid July with the intention of surveying the same employee groups again with the same questionnaires in the low season period. In addition, more than 500 questionnaires were distributed to control group (Hotel D) at time 1 in the same period. The questionnaire to be completed by employees contained background info (such as age and gender) and the two job satisfaction instruments. The total number of respondents Responses hotels A, B, C, and D were 335 employees, with 262 respondents being from hotels A, B, and C.

In preparation for time 2 analysis, the respondents from hotels A, B, and C were contacted again for filling the job satisfaction instruments in time 2 - characterized by low corporate performance (September – October). A total of 253 respondents had taken part in both waves of the study out of an original figure of 262 respondent from the three hotels (A, B, and C). In parallel, around 500 questionnaires, also containing background variables and two job satisfaction instruments had already been distributed to control group Hotel E in the same period with a figure of 83 respondents.

Data Analysis
The main hypothesis, that there will be a statistically significant difference in job satisfaction scores from time 1 of high corporate performance to time 2 of low corporate performance will be tested using paired sample t-tests for hotels A, B, and C respondents. Moreover, a one-way analysis of variance test with planned comparisons will be conducted on the data for the three hotels (A, B, and C) to be compared with control group Hotel D at time 1; with the same tests for the for the hotels (A, B, and C) compared with control group E at time 2. This is mainly done to explore if the means of the control groups are different from the rest at times 1 and 2 to test for any order effects present.
RESULTS

HRM

With respect to HRM, all managers in all five hotels had indeed indicated via the HR checklist tool that all 10 HR practices are followed in their organization. This is not surprising given that these hotels are considered to be a group of the finest hotels in the world.

Corporate Performance

At time 1 of the survey, the hotel management claimed that on average they had above 85% as their current guest occupancy rate. This confirmed the expectation that mid of July was in fact the high season context where the hotels have a high number of guests in their hotels and hence result in higher revenues. After three months, in time 2 of the survey, the hotel management claimed that their current guest occupancy rate had dropped below 50% on average. In other words, this finding confirmed our expectation that during these months the revenues of hotels under study had greatly decreased.

Job Satisfaction

The next step in the research was to measure job satisfaction of the same employees in the hotels at two different times. The first time was during the hotels’ high corporate performance period (high season) and the second time was during the hotels’ low corporate performance period (low season). The rationale here was to assess if a change in corporate performance (high vs. low) would produce a change in job satisfaction regardless of HR practices. If the results of this study show that there is a significant change in job satisfaction scores from time 1 to time 2, then this study would have identified an important organizational control variable, that is corporate performance.

Paired sample t-tests were conducted on the three main hotel groups whereby data on participants’ satisfaction (Kunin, 1955; Cammann et al., 1982) in their jobs was collected in the two different times.

Hotel A

With respect to Hotel A, on the Faces satisfaction scale (Kunin, 1955), there was statistically a significant decrease in satisfaction from time 1 (M=4.4127, SD=2.128) to time 2 (M=6.3333, SD=1.967), t(125)=-15.58, p<.0005. The eta squared statistic (.66) indicated a large effect (see Cohen, 1988). In the second job satisfaction instrument used in this study (Cammann, et al., 1982) for the same hotel, there was statistically a significant decrease in satisfaction scores from time 1 (M=4.8439, SD=1.186) to time 2 (M=3.7566, SD=1.161), t(125)=16.30, p<.0005. The eta squared statistic (.65) also indicated a large effect.

Hotel B

The output of paired sample t-tests for the Face job satisfaction scale showed that there was statistically a significant decrease in satisfaction from time 1 (M=4.5443, SD=2.368) to time 2 (M=6.9873, SD=2.366), t(78)=-4.699, p<.0005. The eta squared statistic (.22) indicated a large effect. With respect to job satisfaction scores for the second job satisfaction instrument (Cammann et al.,1982), there was statistically a significant decrease in satisfaction scores from time 1 (M=4.7932, SD=1.293) to time 2 (M=3.2996, SD=1.486), t(78)=4.905, p<.0005. The eta squared statistic (.23) indicated a large effect.

Hotel C

Similarly, employee satisfaction in hotel C also differed between the two periods. In terms of the Faces satisfaction scale (Kunin, 1955), there was statistically a significant decrease in satisfaction from time 1 (M=4.5417, SD=1.623) to time 2 (M=6.4375, SD=1.146), t(47)=-8.567, p<.0005. The eta squared statistic (.60) indicated a large effect.

Finally, with respect to responses on the overall satisfaction scale (Cammann, et al., 1982) in hotel C, there was statistically a significant decrease in satisfaction scores from time 1 (M=4.9236, SD=.889) to...
time 2 (M=3.506, SD=.663), t(47)=10.081, p<.0005. The eta squared statistic (.68) indicated a large effect.

In concluding this section, one-way analysis of variance conducted on the job satisfaction data for the study group hotels and control group hotels revealed that there were no order effects present as far as this study is considered, therefore boosting the validity of the current results (e.g. Tabachnik and Fidell, 1999; Howell, 2002).

DISCUSSION AND CONCLUSION

It has been argued in this paper that surveys which examine the relationship between HR practices and employee attitudes tend to control for a wide number of employee control variables to the neglect of some important organizational control factors which can potentially have an influence on job attitudes. According to the results of this work, corporate performance is highly related job satisfaction. These results are consistent with the results of previous studies (Schneider, et al., 2003), and strengthens further the body of research in this area.

Results from paired sample t-tests indicated a significant difference in job satisfaction scores within the hotels from time 1, where the hotels where experiencing a high occupancy rate to time 2, where the hotels were experiencing a hard financial slow down - confirming the general hypothesis of this study that corporate performance is highly related to job satisfaction attitudes. It follows that a positive corporate performance context was associated with positive job satisfaction attitudes in the workplace, while a low corporate performance was related to low job satisfaction. The results attained here show support to Marchington et al. (1994) arguments related to the influence of corporate performance on the general attitudes of employees. In addition, interestingly, the findings here show that the effect of corporate performance on job satisfaction is considered to be important, as reflected by the large effect size established in the study (Cohen, 1988). Further, given the strength of the study design, as being a repeated measure, involving the same employees being surveyed twice in the same organizations (once during high corporate performance and another time during the low performance) eventually kept the effects of confounding variables at a minimum and further boosted the conclusions of this study (e.g. Field, 2004). Putting this into an HRM perspective, comparing job satisfaction scores longitudinally over two different periods in the same organizations which are following the same HR practices allowed us therefore to assess more accurately the potential impact of our independent variable (corporate performance) on job satisfaction.

Harley’s (2002) study which showed that employee satisfaction was affected by a whole range of unknown variables over and above HR as shown by a very small (r2) in his model fits well within the results of this study. This study, it seems, has identified a powerful control variable in this direction. Given the significance of corporate performance on attitudes as shown in this study, current surveys which explore the relationship between the number of HR practices and employee satisfaction would therefore be limited in the continued absence of corporate performance as a control variable; leading eventually to a spurious correlation (Yaffee, 2003) and misleading management implications. For example, by failing to incorporate the effects of corporate performance on employee attitudes in these HR surveys, the HR-attitude relationships being explored in the current studies may risk being either overestimated during a positive financial performance context, and underestimated during low financial performance context.

Explaining the psychological reasons for this effect is beyond the scope of this paper, however during a low financial context represented by a hotel’s low-season, employees tend to exhibit negative feelings as reflected by their low job satisfaction scores in part two of the study which may be due to low morale in this context (e.g. Hyman et al., 2002).

Regarding our third proposition that HR policies will not maintain positive job satisfaction during the low financial performance context, the results show that HR policies in fact failed to maintain job satisfaction during that period – a disappointing finding for HRM advocates. However, upon closer investigation of this issue at a later date, it was determined from employee interviews that most of the HR
practices aren’t fully implemented, confirming that HRM remains largely rhetoric (Legge, 1995). In other words, although the managers of the hotels confirmed their existence, in reality they were not fully applied to enhance job satisfaction (e.g. Schein, 1980).

LIMITATIONS AND FUTURE RESEARCH

It should be noted that one main advantage of this study is built in the fact that it had employed a longitudinal study design, thereby minimizing potential causality problems common to cross-sectional studies. Nevertheless, as with all studies, study limitations exist. Firstly, the fact that this study has focused on a single sector may limit the generalization of this study to other sectors. It follows that corporate performance, in other sectors or industries may or may not have significant effects on job satisfaction. Secondly, this study has relied upon subjective measures of corporate performance as indicated by managers, and hence may not transform into reliable objective measures of corporate performance. This calls for future studies which tackle those limitations and build further support to the results attained here.

Given the novelty of the relationship between corporate performance and job satisfaction and the importance it has for improving HR attitude surveys and hence management implications, further research in this field is called for. To improve our understanding of this area, more empirical studies are needed across different sectors and industries. Moreover, comprehensive theoretical models are critically needed in this area to understand the underlying variables behind the impact of corporate performance on job satisfaction.

REFERENCES


Pre-Employment Integrity Testing in Israel: A Validation Study

Saul Fine
Midot, Ltd.

Baruch Nevo
University of Haifa, Israel

Merav Hemi
University of Haifa, Israel

Few prior studies have examined the validity of integrity testing in Israel, where these tests are prevalent. Among 201 Israeli students, overt integrity was found to have statistically significant correlations with: self-reported counterproductive work behaviors (-.29), prior dismissals (-.18), and a simulated theft scenario (-.20), but not with a simulated deception scenario. In addition, the integrity test scores showed no indication of adverse impact or test bias for gender, age, or national origin. Overall, this study supports the international literature on this topic, and provides evidence towards the usefulness of integrity testing for personnel selection in Israel.

INTRODUCTION

Employee integrity may very well be one of the most robust personality constructs in personnel psychology (Gottfredson, 2002). Job analyses and employee surveys alike have consistently identified integrity as critical job requirement for a broad range of jobs and industries around the world (Bartram, Lindley, Marshall, & Foster, 1995; Fine, 2008; Kouzes & Posner, 2009; Scholarios & Lockyer, 1999). In addition, integrity often appears as a fundamental component of leading companies’ organizational values (AMA, 2002; Fulmer & Conger, 2004). Indeed, it would be difficult to imagine an organization for which the integrity of its employees is not of paramount importance for its success. As a result, and considering a fundamental tenet of personnel selection is to predict job performance based on key job competencies (Guion, 1991), in some respects, it might be considered inappropriate for organizations not to assess a trait as important as this one (Martin & Orban, 1995).

Despite the rational and empirical basis for assessing integrity among new job applicants and the increasingly common practice for doing so in organizations around the world (Miner & Capps, 1996), supporting research regarding the effectiveness of integrity tests internationally is still very much lacking. In addition, only a small percentage of the current research on this topic has included primary samples from outside of North America (Berry, Sackett, & Weimann, 2007). Despite the widespread use of integrity in Israel, for example, and the recognition of integrity as a critical job requirement in Israel (Solomon, 2010), little local validity evidence is available to support their usefulness.
Integrity Testing

Integrity testing has seen steady growth in both practice and research in the past two decades, with increased evidence regarding the usefulness of integrity testing for screening out job applicants with risks towards future involvement in counterproductive work behaviors (CWB; Ones & Viswesvaran, 2001; Wanek, 1999). In addition, while a recent meta-analysis by Van Iddekinge, Roth, Raymark, and Odle-Dusseau (in press), has raised concerns regarding the validity of integrity tests for predicting job performance, the validity for predicting counterproductive work behaviors remains supported.

In terms of the content of integrity tests, these tests typically include direct questions regarding attitudes and opinions towards CWB. Integrity tests of this type are known as “overt” tests, and may be distinguished from personality-based tests which measure psychological traits that are primarily related to facets of conscientiousness, agreeableness and emotional stability (Sackett, Burris, & Callahan, 1989). The predictive validities of overt and personality tests are largely similar (Ones, Viswesvaran, & Schmidt, 1993), while overt integrity tests have been reported to predict CWB beyond that of traditional Big Five scales (Berry et al., 2007). Overt integrity tests, which are more commonly used in Israel, are based primarily on attitude-behavior theory (Ajzen & Fishbein, 1977), whereby individuals who believe CWBs are normative or justifiable, and/or are lenient towards their offenders, are considered to be a greater risk for engaging in such behaviors themselves (Murphy, 1993; Wanek, 1999). A typical item from a standard overt integrity test, for example, might be the degree to which an individual agrees or disagrees with the statement, “most employees will steal from employers at least once,” presumably tapping the perceived normativity of employee thefts.

It should be noted, however, that CWB does not merely refer to employee crimes. CWB is considered to include a wide range of inappropriate and/or undesirable work behaviors that may target an organization (CWB-O; e.g., drugs, sabotage, absenteeism, and negligence) as well as other individuals (CWB-I; e.g., harassment, disobedience, and backstabbing), with varying degrees of severity (Robinson & Bennett, 1995). It should also be noted that these behaviors are prevalent, with the great majority of U.S. employees reportedly having engaged in some form of CWB, roughly one third admitting to having stolen from their employers (Hollinger & Clark, 1983; Sackett & Devore, 2001), and similar results from Israel (Lachman & Shpigel, 2004). Therefore, considering the damages that may be caused by CWB, which have been valued in the hundreds of billions of dollars annually (Murphy, 1993), organizations clearly have a strong interest to reduce the extent of CWBs.

It may not be surprising, therefore, that integrity tests are in used for personnel selection around the world. Although survey studies have found integrity test usage to be less extensive than alternative assessment tools (Ryan, McFarland, Baron, & Page, 1999), estimates indicate that millions of tests are administered each year in the U.S. alone (Camara & Schneider, 1994). No specific research is available on the extent of integrity testing in Israel, but based on the first author’s experience, many of the large organizations in Israel, and certainly a majority (if not all) of the large banking institutions in the country, use integrity tests as part of their standard assessment and selection processes. In addition, several Israeli-developed integrity tests are commercially available, which are used nearly exclusively.

Studying Integrity Test Validity

In one of the most criticized aspects of integrity test research, studying criterion based validity presents something of a methodological challenge. Specifically, objectively defined criteria of CWB are not always reliable or observable, due in part to their notoriously low base rates and even lower detection rates (Camara & Schneider, 1994). In addition, supervisor appraisals of integrity are far less readily available, and may also suffer from “conceptual limitations” (Berry et al., 2007, p. 280). Instead, a commonly used alternative criterion for measuring integrity test validity in field studies has been the use of personal admissions (Sackett & Wanek, 1996). Personal admission criteria are self-reports of specific past behaviors (e.g., prior involvement in workplace theft), or the consequential outcomes of these behaviors (e.g., prior dismissals). In some respects, it is possible to consider admissions as proxies for external evidence of prior involvement in these behaviors. In this way, admissions facilitate measures of “postdictive” validity (Jones, 1991).
The use of self-reported postdictive criteria measures such as these is not without criticism, however. In particular, the reliability of admission criteria may be criticized for their susceptibility to faking in high-stakes scenarios. Paradoxically, researchers have found that verifiable questions about one’s past behaviors are typically responded to honestly (Becker & Colquitt, 1992). Therefore, despite the apparent ability to distort responses, there is less evidence that job applicants actually do so. Stuman and Sherwyn (2007) offer that the reasons for these unintuitive behaviors may be due to job applicants’ rationalizations for responding honestly, such as: trivializing their deeds due to their perceived normativity, justifying their actions due to extenuating circumstances, under-reporting (i.e., admitting to only a portion of their behaviors), and providing honest admissions due to concerns that their responses will be verified. Accordingly, it is perhaps understandable why some studies have found that faking in general on integrity tests has minimal effects on overall validity levels (Ones & Viswesvaran, 1998a; Ones, Viswesvaran, & Reiss, 1996).

Another criticism for using admission criteria is that of “common method bias,” which is created when both the predictor and the criterion are derived from individual self-reports, and is exacerbated by content overlap in the measures. Common method bias might be responsible for spuriously high correlations, while the lack of reliability in external measures may lead to spuriously low correlations. Indeed, postdictive validity coefficients are typically much larger (ρ = .42) than those found for externally derived criteria (ρ = .15; Van Iddekinge et al., in press), clearly indicating the need to include both criterion source types when validating these tools.

In addition to postdictive admissions, and in light of the difficulty to reliably observe CWB in occupational settings, a growing number of researchers have chosen to adopt strategy of studying CWB in controlled research designs (Berry et al., 2007). In these experimental settings, participants are presented with opportunities to engage in simulated acts of CWB, while being observed by the researchers without the participants’ awareness. Examples of such designs include giving participants an opportunity to change answers or scores on a performance task when they think no one is looking, giving them access to a test’s answer key and observing whether or not they use it to correct their answers, giving them unsupervised access to food or small money and observing who takes without permission, etc. (Nicol & Paunonen, 2002; Mikulay & Goffin, 1998). Overall, integrity tests have found low to medium validities for simulated behavioral criteria such as these (e.g., scenarios of deception rs = -.08 to -.25, and stealing rs = -.04 to -.32) depending on the given tasks and situations (see Berry et al., 2007, for a summary).

In order to have practical relevance, simulated elicitations of counterproductive behaviors may wish to measure realistic occupational scenarios (e.g., observing acts of theft as opposed to acts of cheating on an academic test). In addition, any single-act criteria such as these would need to be interpreted cautiously, as they themselves may be questioned in terms of measurement error and overall reliability. Therefore, including multiple such criteria is preferable.

**Integrity Testing in Israel**

Given the importance of integrity as a key competency requirement for jobs around the world (Kouzes & Posner, 2009), the validity of integrity tests can be reasonably hypothesized to be generalized cross-culturally. Moreover, based on the robust meta-analytic data from the U.S. by Ones et al. (1993) and Van Iddekinge et al. (in press) and validity generalization theory (Schmidt & Hunter, 1977) one could hypothesize integrity test validity to be transportable across contexts and settings. However, as long as the primary samples of these meta-analyses were derived in similar geographies, empirical evidence is still required to generalize the validity to new cultures (Herriot & Anderson, 1997; Liefens, 2008). Such appears to be the case with integrity testing.

Initial evidence has been found for the cross-cultural validity of integrity testing in predicting CWB admissions, although this area is still very much understudied. In one such study, Fortmann, Leslie, and Cunningham (2002) found that their overt integrity test maintained significant validity coefficients for CWB admissions and supervisor ratings among samples from Argentina, Mexico, South Africa and the US. In another study, Marcus, Lee, and Ashton (2007) reported similar validities for integrity against self-reported CWB admissions among German and Canadian undergraduates. In one of the only Israeli based
studies located, Fine, Horowitz, Weigler, and Basis (2010) found evidence for the validity of integrity in predicting criminal admissions among a sample of retail employees in Israel ($r = -.35$). In another such study, Fine (2010), cross-culturally compared integrity test validities for general CWB admission criteria in the banking sector, and reported a significant validity for the Israeli sample ($r = -.32$), as well as for the other countries studied. While encouraging, the above studies were primarily based on self-reported admissions of CWB, and have yet to incorporate controlled designs of actually elicited CWB behaviors. In addition, since the above studies were carried out on actual job applicants, incentives to falsify self-reported criteria information and the possible contamination of the validity results cannot be refuted. Controlled experimental designs are therefore important to corroborate prior cross-cultural findings.

In addition to validity evidence, meta-analyses by Ones & Viswesvaran (1998b) have found integrity tests to be non-discriminating against protected minority groups for age (>40), gender (females), and race (non-whites) in a variety of settings. In fact, females tend to score slightly higher than males ($d = .16$), and older individuals slightly higher than younger ones ($d = .08$). That integrity tests are non-discriminating is, of course, essential to ensure fair and legal hiring practices when used in personnel selection around the world (e.g., SIOP, 2003; US EEOC, 1978) as well as in Israel (i.e., Israeli Ministry of Industry, Trade and Labor, 1988; Israel Psychological Association, 2004). However, the effects of integrity on local subgroups outside of the U.S., in terms of age, gender and race are still largely unknown. Further local research in this area is therefore important.

Building on the current integrity testing literature, the present study set out to examine the degree of usefulness of integrity testing in Israel in a controlled setting, using both interpersonal and organizational oriented CWB criteria in the form of admissions and simulated behaviors.

**METHOD**

**Sample**

The sample for this study included 201 students from a large public Israeli university. 49.3% of the sample ($N = 99$) were males and 50.7% females ($N = 102$). 86.1% of the sample ($N = 173$) were native Israelis and the remaining 13.9% ($N = 28$) were immigrants born outside of Israel, primarily from the former Soviet Union. Participants’ mean age was 25.5 ($SD = 2.6$), each with at least one year of job experience. The sample was represented by the following areas of study at the university: social sciences (36.3%), humanities (30.3%), health and welfare (13.9%), law (12.4%), education (5.5%), and other (1.6%).

**Measures**

Integrity

Integrity was measured using the *IntegriTEST*, a web-based overt integrity test, developed in Israel (Fine, 2008). The test includes 96 items, which measure opinions (i.e., punitiveness, pervasiveness, and rationalization) towards CWBs. The test has one overall scale and 4 sub-scales: Theft, Report, Norms and Bribery. The test’s admissions section, which relates to past behaviors, was not included in the overall score for this study. The overall score consists of three ordinal recommendation ratings, as follows: (1) “Not recommended,” (2) “Marginal” and (3) “Recommended”, where (2) is the typical cutoff score. Only the test’s overall score was used in this study. Sample items include questions such as: “If a colleague was to offer you drugs, would you complain to their superiors?”; “Do you think a person has the right to break laws they don’t agree with?”; and “Should a company employ someone who is known to have been fired for stealing in the past?” Each item includes a 3-point response scale (“Yes”, “No” and “??”). The overall score has a test-retest reliability of .70 over a period of between 2 and 8 weeks, based on a sample of 346 job applicants. A convergent validity of .52 was found between the overall integrity score and independently collected pre-employment security interviews among 217 job applicants in a large bank. And, among 1,232 job applicants in a large retail chain, divergent validity was found between integrity scores and mental ability levels ($r = .03$).
The criterion used for this study was a self-report measure of past involvement in deviant workplace behaviors. Items were based on a translated version of the 19-item CWB behavioral admissions checklist developed by Bennett and Robinson (2000). The CWB admissions index included 12 items measuring organizational deviance (CWB-O; i.e., acts targeting the organization such as theft, fraud, bribery, sabotage, absenteeism; Cronbach alpha = .82), and seven items measuring interpersonal deviance (CWB-I; i.e., acts targeting other members of the organization such as fighting, rudeness, offending, etc.; Cronbach alpha = .80). Confirmatory factor analysis using structural equation modeling (SEM) with latent variables produced a good fit for the two main factors of CWB, $X^2(150) = 264.1, p < .001; \text{RMSEA} = .06 (90\% \text{CI} = .49 \text{to} .74); \text{CFI} = .90$. Participants indicated the frequency with which they had engaged in deviant behaviors by responding to each item on a 7-point Likert type scale: (1) “never”, (2) “once a year”, (3) “twice a year”, (4) “several times a year”, (5) “monthly”, (6) “weekly”, and (7) “daily”. Sample items include: “I act rudely toward someone at work”; “I say hurtful things to people at work”; “I come to work late without permission”; “I neglect to follow my boss’s instructions”. Overall CWB was measured as the mean of both facets (CWB-O and CWB-I), representing an overarching latent construct (Berry, Ones, & Sackett, 2007).

Prior dismissals
Prior dismissals were measured by four self-reported biographical statements each having two response options (1) “yes” and (0) “no”. The items tap four possible reasons for having been fired in the past: Inappropriate behavior, conflicts with superiors, suspicion of misconduct, committing an offense (i.e., “have you ever been fired for…”). The overall score was dichotomized based on the endorsement of one or more items. Reliability KR-20 = .64.

Theft scenario
A dichotomous behavioral criterion of organizational deviance, representing monetary theft was created by using a simulated theft paradigm. In this paradigm, participants were purposely (and significantly) overpaid for their involvement in the experiment, after which time the administrator reported whether or not the participants returned the extra money (any time thereafter for the duration of the experiment). Specifically, each participant was told before and after the experiment that they would be paid 60 shekels (approximately 15 U.S. dollars) for their participation in the experimental trial. Upon completion of the experiment, the administrator reminded each participant individually by saying, “here is your payment of 60 shekels” when handing them an envelope with their payment. In each envelope were four notes of 20 shekels each (i.e., 80 shekels), instead of the appropriate three notes of 20 shekels, in order to appear as if an accounting error had occurred (based on Cunningham, Wong, & Barbee, 1994).

Deception scenario
A dichotomous behavioral criterion of interpersonal deviance representing dishonest reporting was created by asking participants to report their psychometric university entrance exam (PET) scores. Subsequently, the reported scores were matched against the university’s database, and positive discrepancies (i.e., where reported scores were higher than actual scores) were noted. The PET, developed by the National Institute of Testing and Evaluation (NITE), in Israel, consists of three subtests: verbal reasoning, quantitative reasoning, and English language, which are aggregated into an overall composite score of general scholastic aptitude. This composite score is reported as a standardized score, ranging from 200 to 800, with an approximate mean of 500 and standard deviation of 100. Reliability and validity indices for the PET have been studied at length (e.g., Beller, 1994; Nevo & Oren, 1986).

Procedure
Participants were recruited to participate in this study via notices that were posted around the university campus advertising the experiment as a study in attitudes towards behaviors at work. Participants were tested in a computer lab in groups ranging from one to ten, and underwent other
experimental trials in addition to those described here. At the start of this trial, the participants were specifically instructed to respond honestly to the questionnaire despite the sensitivity of the content. In addition, they were promised complete privacy of their personal responses, and used dummy-coded identification numbers throughout the experiment. The integrity measure was completed online, while the CWB questionnaire was completed separately in paper and pencil format. All participants were explained the nature of the experiment in advance, signed a written consent form to participate in the experiment and have the data used for research purposes, and were given the opportunity to discontinue the experiment at any time. Participants also granted the researchers permission to retrieve PET scores from the university database. The researchers gave the participants ample time to return the money in the simulated theft scenario (up to several weeks), and did not approach anyone who did not return the money.

RESULTS

Descriptive Statistics

The descriptive statistics of each measure can be found in Table 1. The mean integrity score was 2.16 ($SD = .92$), which reflects: 51.7% high or “recommended” scorers ($N = 104$), 12.4% moderate or “marginal” scorers ($N = 25$), and 35.8% low or “not recommended” scorers ($N = 72$), based on the tests standard norms. In terms of the criteria, the mean CWB score was 2.05 ($SD = .77$), indicating that most participants had engaged in at least some form of CWB at least once. In addition, 13.9% of the sample ($N = 28$) admitted to having been fired from a previous employer. Regarding the simulated theft, just under one-third (i.e., 30.2%, $N = 57$) of the sample did not return the extra money. Finally, actual PET scores ranged from 392 to 763, with a mean of 622.74 ($SD = 84.60$). 39.3% of the participants ($N = 77$) inaccurately reported their PET scores (to at least some degree) by an average difference of 25.5 points ($SD = 38.2$).

TABLE 1
DESCRIPTIVE STATISTICS AND INTER-CORRELATIONS

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<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
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<th>2</th>
<th>3</th>
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<th>5</th>
<th>6</th>
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<td>1</td>
<td>Integrity</td>
<td>201</td>
<td>2.16</td>
<td>0.92</td>
<td>( .70)</td>
<td>.22**</td>
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<td>2</td>
<td>CWB-I</td>
<td>201</td>
<td>2.12</td>
<td>0.89</td>
<td>-.22**</td>
<td>( .80)</td>
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<td>3</td>
<td>CWB-O</td>
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<td>0.77</td>
<td>-.27**</td>
<td>.42**</td>
<td>( .82)</td>
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<td>0.70</td>
<td>-.29**</td>
<td>.86**</td>
<td>.82**</td>
<td>( .85)</td>
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<td>Dismissal</td>
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<td>1.14</td>
<td>0.35</td>
<td>-.18*</td>
<td>.11</td>
<td>.18*</td>
<td>.17*</td>
<td>( .65)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Theft</td>
<td>189</td>
<td>1.70</td>
<td>0.46</td>
<td>-.20**</td>
<td>.03</td>
<td>.23**</td>
<td>.15*</td>
<td>.06</td>
<td>( --)</td>
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<tr>
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<td>Deception</td>
<td>196</td>
<td>1.39</td>
<td>0.49</td>
<td>-.01</td>
<td>.16*</td>
<td>.03</td>
<td>.12</td>
<td>.10</td>
<td>-.01</td>
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</table>

*p < .05, **p < .01. Notes: Reliability estimates are shown in the diagonal; Integrity scores ranged from 1 (low) to 3 (high); CWB ranged from 1 (never) to 5 (daily); Dismissal, Deception, and Theft: 1 (no), 2 (yes). a Source: Fine, 2008.

Validity Indices

As shown in Table 1, integrity test scores were significantly correlated with CWB (.29). Integrity scores were also correlated with prior dismissals (-.18), as well as the simulated theft scenario (.20). However, integrity scores were not significantly correlated with the deception scenario. Among the criteria, self-reported CWB was correlated with the behavioral theft criterion (.15), but not with deception (.06). Interestingly, however, on the facet level, CWB-O was more strongly correlated with the theft scenario (.23) than was CWB-I (.03). And, CWB-I was significantly correlated with deception (.16), while CWB-O was not (.03).
In accordance with these validity levels, significant differences in the incidence of CWB by test scores can be expected. Specifically, 19.4% ($N = 14/72$) of the individuals with low (i.e., “not recommended”) integrity scores, admitted to having engaged in counterproductive work activity on a weekly basis or more, compared to just 6.7% ($N = 8/104$) among the individuals with high (i.e., “recommended”) scores. In other words, there was nearly a three times greater probability for being consistently involved in CWB among individuals with low integrity scores, $X^2 = 6.54, p < .01$.

Similarly, in terms of the simulated theft, individuals with low integrity scores were nearly twice as likely to not have returned the additional money given to them, compared to individuals with high integrity scores. Specifically, 40.6% of the low integrity test scorers ($N = 28/69$) chose not to return the money compared to 21.1% ($N = 20/95$) of the high integrity test scorers, $X^2 = 7.36, p < .01$.

Finally, 20.8% ($N = 15/72$) of individuals with low integrity test scores admitted to having prior dismissals compared to just 7.9% ($N = 8/104$) of individuals with high integrity test scores, a ratio of more than two and a half to one, $X^2 = 6.47, p < .01$.

**Fairness**

No evidence of adverse impact due to test score differences was found for the subgroup studied (see Table 2). Since the sample had no participants over the age of 37, the typically studied protected subgroup of individuals over the age of 40 was not available. Instead, differences between particularly young participants (<25) were investigated. This was not done from an adverse impact perspective, of course, as young individuals are not a protected group, but rather to investigate possible differences due to young test takers’ lesser work experience and/or different possible outlook regarding CWB that might have influenced their responses (Ones & Viswesvaran, 1998b). No such differences were found ($d = 0.09$). Females’ integrity scores were slightly higher than males ($d = 0.25$). And, scores from new immigrants were not significantly different from those from native Israelis ($d = 0.11$). As a rule of thumb, effect sizes ($d$) of 0.2 and below are considered to be small, generally indicating no meaningful operational differences (Cohen, 1988). Similarly, none of these subgroup differences were found to violate the 4/5th rule for estimating adverse impact. The 4/5th rule is a method for evaluating adverse impact, which states that protected subgroups cannot be hired at a rate less than 80% that of the majority group (Bobko & Roth, 2004; US EEOC, 1978). As shown in the Table 2, the passing ratios of this test were within this criterion for all subgroups.

**TABLE 2**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean$^1$</th>
<th>SD</th>
<th>t</th>
<th>d</th>
<th>4/5th rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>70</td>
<td>2.13</td>
<td>.92</td>
<td>0.54</td>
<td>0.09</td>
<td>95%</td>
</tr>
<tr>
<td>≥25</td>
<td>131</td>
<td>2.21</td>
<td>.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>99</td>
<td>2.04</td>
<td>.94</td>
<td>-1.81</td>
<td>-0.25</td>
<td>119%</td>
</tr>
<tr>
<td>Female</td>
<td>102</td>
<td>2.27</td>
<td>.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Origin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israeli</td>
<td>173</td>
<td>2.17</td>
<td>.92</td>
<td>0.54</td>
<td>0.11</td>
<td>87%</td>
</tr>
<tr>
<td>Other</td>
<td>28</td>
<td>2.07</td>
<td>.98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, **p < .01; $^1$Integrity scores ranged from 1 (low) to 3 (high).

Test fairness may also be measured by test bias, i.e., the differential prediction of the criterion between subgroups, which may lead to inaccurate or unfair selection decisions as a result of prediction errors (Aguinis & Smith, 2007). A series of moderated regression analyses were carried out for groups of gender, age, and country of origin, whereby a significant change in $R^2$ after entering the subgroup variable and/or an interaction variable between the subgroup and the test would be an indication of test bias (Lautenschalger & Mendoza, 1986). Across all of the criteria and subgroups, none showed significant changes in $R^2$ ($p > .05$), indicating no evidence of test bias.
DISCUSSION

This study was one of the first controlled investigations of integrity test validity in Israel. The scores from a widely used Israeli integrity test were studied against a set of criteria that can be described in terms of two main parameters: measurement method (self-report vs. behavioral) and construct orientation (interpersonal vs. organizational). Studying these variables together allowed for a more comprehensive look at the criterion-related validity of the test, as well as a unique opportunity to compare some of the various measures typically used to validate pre-employment integrity tests, which have seldom been examined collectively.

In terms of the descriptive statistics, it is worth noting that among actual applicant populations, the integrity test’s score distributions are distinctly more positively skewed, with approximately 15% “not recommended” scores (Fine, 2008), compared to the 36% found here. This difference is reasonable, given both the lower stakes situation of this experiment and the explicit instructions to respond honestly, compared to actual occupational settings, which may otherwise have elevated scores, but in-turn resulted in a lower power for the analyses. However, as a result, the findings here may not be directly applicable to true high stakes selection scenarios. In terms of the criteria, the rates of self-reported CWB were in accordance with the literature, which report the majority of employees to have engaged in at least some degree of CWB (Murphy, 1993). In addition, the rate at which participants chose not to return the extra payments (roughly 30%) is in line with an estimated rate of employee thefts overall (Hollinger & Clark, 1983) as well as the return rates of similarly designed experimental trials (Cunningham et al., 1994).

Validity in Israel

The overall validity results are congruent with those from prior meta-analyses, in terms of the approximate magnitudes of the coefficients for both the self-report and external criteria (e.g., Cunningham et al., 1994; Ones et al., 1993; Sackett & Harris, 1984). By replicating prior findings from primarily North American data in this way, this study has shown (to at least some extent) that integrity test validities may be transportable to the Israeli workforce. Indeed, according to Lievens (2008), the validity of broad constructs, such as integrity, should generalize cross-culturally and be transportable, as the present results would suggest.

To be sure, individuals with low overt integrity test scores are not necessarily considered to be unethical or dishonest. This would neither accurately reflect the construct measured, nor the level of its validity. Overt integrity tests measure opinions towards CWB, such that extreme opinions indicate a greater risk of involvement in CWB, relative to those without such opinions. Although assessing risk in this way may be an effective method to reduce CWB, a significant percentage of low scorers will still not be involved in any form of deviant behaviors (Sackett & Wanek, 1996). While this (i.e., false positives) may be true for any selection device, due to possible stigmatizations that may result from misinterpreting integrity results in this way, practitioners should be especially careful.

In light of the criticisms surrounding the use of self-report criteria of CWB in integrity test validity studies (Berry et al., 2007), the fact that this study included criteria of both self-reports (i.e., CWB and prior dismissals) and behavioral observations (i.e., theft and deception) is especially significant. Specifically, based on the validity indices, the findings of this study imply that despite their methodological challenges, admissions may be a viable alternative criterion for initial validity evidence when external criteria are not available. In addition to the integrity test validity, this contention is also based on the inter-relationships between the nature of the criteria themselves. Convergence was found between the two “interpersonal” criteria, and also between the two “organizational” criteria. That is to say, the behavioral scenario of deception (an interpersonal offense) was positively related to self-reported variable of CWB-I, and the behavioral scenario of theft (an organizational offense) was positively related to self-reported variable of CWB-O. Together, these relationships, while moderate in magnitude, provide important reliability evidence, while also supporting prior findings that self and other-reported CWB measures significantly converge on at least some facets (Fox, Spector, Goh, & Bruursema, 2007).
An interesting point that was brought up by the U.S. Congress Office of Technology Assessment report (1990) on integrity testing regarding admissions criteria is worthy of discussion. They ask that if self-reported past behaviors are to be considered good criteria of CWB for studying integrity test validities, companies should consider using these admissions themselves for selection purposes, instead of integrity tests (p. 52). In response, it should first be noted that admissions surveys represent just one possible criterion for demonstrating integrity test validity, and are by no means ideal, due to the methodological limitations already mentioned above. Second, there are a number of reasons why organizations may not wish to administer admission surveys of this kind to job applicants: a) their items are fully transparent and may appear to be more prone to faking than integrity tests; b) their items may be perceived to be more invasive or unfair than integrity tests, and elicit more negative applicant reactions as a result; c) they rely on applicants having sufficient past job experience, and may therefore be inappropriate for new or young hires. Finally, several integrity tests include separate admissions scales for this very purpose (Sackett et al., 1989), but certainly not as substitutes for the other scales.

Regarding another issue related to self-reported criteria, by recognizing some degree of content overlap between the predictor criterion in these cases, the relationship between the two may be considered one of construct validity rather than criterion validity (Ones et al., 1993). As such, the magnitude of the correlation coefficients found here (.20s - .30s) may be considered low for construct validity. On the other hand, many integrity test scores (including the one studied here) are derived from additional measures, beyond the directly self-reported item responses (e.g., response latencies, lie scales, avoidance responses, consistency measures, etc.). Therefore, since the content overlap represents only part of the test score’s measurement, high construct validities are not necessarily to be expected. In order to examine this point more thoroughly, new integrity scores were created based only on the direct item responses, and yielded substantially higher construct validities than the original test scores. Specifically, validity significantly increased from -.29 to -.49 for the self-reported CWB criterion \((t = 2.98, p < .01)\), although only slightly for the self-reported dismissal criterion \((- .18 \text{ to } -.22, t = .53, p > .05)\). Similarly, the correlation with the behavioral theft criterion increased slightly (and not significantly) using the normative-only scores (from -.20 to -.26, \(t = .78, p > .05\)), and the deception criterion remained approximately zero. While the improvement was not consistent, from this, one might be tempted to prefer the use of the test’s normative scoring method. However, this conclusion would be premature for reason that the present results were achieved in a controlled laboratory study, whereas in real occupational settings, job applicants have stronger incentives to try and “fake” the test. Therefore, the additional scoring measures above and beyond the direct responses are perhaps critical to dealing with faking in real occupational settings - whether or not they are successful in doing so, is unfortunately debatable (Griffith & Peterson, 2006), and a question for another study.

The reason why integrity was not able to significantly predict the behavioral deception criterion is not entirely clear. While the literature has reported comparably low validities for similar deception scenarios (see Berry et al., 2007), at least three possible explanations can be offered for this study’s results. First, unlike the theft scenario, where participants had a monetary incentive to “steal”, participants had no strong incentive to be deceitful on their PET scores, especially given the fact that they were promised anonymity in the study. Second, at least some of the participants may not have honestly remembered their true test scores and thereby unwillingly (rather than deceitfully) misreported their scores. Indeed, five participants reported lower scores than their actual scores, which might indicate such types of errors. Third, since participants were not explicitly asked to write down their “exact scores,” it is possible that some of them decided to round their score for convenience. Accordingly, the majority of differences between reported and actual scores were less than 10 points (i.e., 1/8th of an SD). To be sure, while it is unlikely that any one of the above explanations was responsible for the lack of validity in the deception criterion, it is certainly possible that a combination of them was able to depress the observed correlations to at least some degree.
The Utility of Integrity Testing

Whenever examining the validity of a selection solution in an occupational setting, it is important to consider its monetary utility. Utility refers to the financial benefit the selection solution has on the organization (i.e., its return on investment, or ROI), and is calculated as the monetary return from using the test minus its costs (Cascio, 1998). While utility is typically considered in terms of increased productivity gained from high performing employees hired via the selection system, here we relate to it in terms of counter-productivity saved from not hiring potentially problematic employees. In terms of the operational usage of integrity testing, this study implies a significant financial utility, whereby individuals who were “not recommended” by the test were two to three times more likely to have been involved in deviant behaviors than individuals who were “recommended”. Accordingly, as deviant work behaviors can lead to substantial financial losses to an organization, when used in the selection process, integrity tests can be seen as a potentially valuable method to mitigate these loses.

With that, it should be clear that not all utility estimates adequately take into consideration the affects of other acts of CWB (e.g., sabotage, absenteeism, negligence, etc.), turnover costs (which are at least 50% of an employee’s annual salary; Johnson, Griffeth, & Griffin, 2000), lost productivity, possible litigation fees, lowered morale, etc., and thus underestimate the true utility of integrity testing. Indeed, according to Ones and Viswesvaran (2001), “it would be a mistake to continue focusing on theft prediction as the only criterion to judge the usefulness of integrity tests in the personnel selection domain” (p. 33). Therefore, the benefits of prevented CWB via integrity testing may be even more substantial than some utility estimates would indicate. In all events, it is critical for organizations to understand the financial implications integrity testing can have.

Subgroup Differences and Test Bias

A final issue investigated in this study was integrity test fairness. As described above, no evidence was found that might have led to adverse impact in applied settings, for the available groups of gender, age, or national origin. As a result, these results indicate that the prior research in this area carried out primarily in the United States (e.g., Ones & Viswesvaran, 1998b), may be generalizable cross-culturally. The results also add to prior findings in terms of studying differences among very young individuals as opposed to older ones, an issue raised previously in the literature (Ones & Viswesvaran, 1998b). Moreover, based on these results, when used together with traditional assessment tools, it is reasonable to assume that integrity testing in Israel can actually help alleviate some of the adverse impact commonly exhibited by cognitive based tests (Hunter & Hunter, 1984; Ones et al., 1993). Finally, while more specific local Israeli minority groups were not studied here, prior evidence of non-test bias between Arab and Jewish Israelis using this test has been established elsewhere (Fine & Basis, 2011).

Concluding Remarks

Overall, this study provides initial empirical evidence for the validity, utility and fairness of integrity testing in Israel, and implies that integrity tests are likely to be effective tools for use in personnel selection in international settings. While the investigation of additional samples, tests, criteria, and longitudinal predictive research paradigms is still required before final conclusions can be made, the immediate findings are supportive of the many organizations currently using integrity tests in Israel today.

NOTE

An earlier version of this paper was accepted for publication (in Hebrew) in the Israeli behavioral science journal, Megamot.

REFERENCES


The Effect of Regulations and Instructions on the Work Alienation of Faculty Members - Jordanian Universities

Dalal Mohamed AL-Zou’bi
Al-balqa Applied University, Jordan

This study tries to highlight some of the factors affecting the work alienation of faculty members at Jordanian universities, such as the suitability of the regulations and institutions, and the universities commitment of applying it in a correct way, because failure in dealing with work alienation may be due to a lack of suitable regulations and instructions, and incorrect application. Data was collected from faculty members in five Jordanian universities in different ranks, using a questionnaire consisting of three sub-measures. Several conclusions have been reached, and it is expected that they will contribute in helping universities dealing with work alienation successfully.

INTRODUCTION

The higher education sector in Jordan leads a significant role in the development process in its comprehensive concept at different levels and areas. Thus, during the past ten years higher education has achieved significant progress in the terms of diversity of study programs and types of education and learning - the quality and quantity- and the expansion of its institutions, despite the fact that Jordan is suffering from the continuous lack in human and natural resources (Ministry of higher education, 2010), where the number of universities have reached ten public universities and seventeen private ones and fifty-one community colleges.

Developments that have occurred in the higher education sector required more efforts to maintain the quality of this sector, which mean reviewing the law of public and private universities and the Higher Education. This lead to commence new law on Higher Education No. (23) for the year 2009 and the Law of Jordanian Universities No. (20) for the year 2009, which came up with more autonomy in administrative and financial affairs in universities (Ministry of higher education, 2010).

In general, because of the special interest in higher education, the ministry of higher education focused attention on the follow-up to implement the national strategy for higher education and scientific research for the years (2007-2012) to maintain higher education outputs and its competitiveness ability, according to system goals consistent with national objectives of higher education in Jordan which focused on the quantitative and qualitative achievements in this sector (National strategy for higher education and scientific research, 2007-2012).

Until now, the regulations and instructions (R&I) that regulates the work of of the faculty members in Jordanian universities still working under the umbrella of the temporary Jordanian universities law No (42), for the year 2001 and its amendments. Therefore, under the umbrella of this law, each university developed its own R&I, which differ among themselves in some aspects and details governing the work of faculty members.
Expectations for this difference could lead to a difference in the views of faculty members on the suitability of these R&I to achieve their aspirations in academic and research work, in addition to a difference in their views on the universities management commitment to apply these R&I in a correct way to reach justice and equality among faculty members of the universities. These differences in faculty members views may cause a state of alienation to them, that alienation refers to the condition in which individuals are separated or dislocated from the organizations in which they work. This condition is commonly experienced as feelings of disenchantment and disaffection (Rodney & Mandzuk, 1994).

In this study, work alienation (WA) is hypothesized to be a direct result of R&I developed by the Jordanian universities. This hypothesis reflects sociological (Aiken & Hage, 1966; Blauner, 1964; Braverman, 1974; Seeman, 1975) and social psychological (Kanungo, 1998; Moch, 1980; Mottaz, 1981) explanations that alienation break-up work into discrete, uncontrollable units that limit the individual’s autonomy and decision-making. Unable to exercise control over work activities, employees experience feelings of powerlessness, meaningfulness and self-estrangement (Kakabadse, 1986). Therefore this study aims to explore:

1. To what extent the faculty members at Jordanian universities believe that R&I are suitable for their academic and research work, and that universities management committed to apply it in a correct way.
2. To what extent the faculty members at Jordanian universities feel alienation at work.
3. The effect of the suitability of R&I, and the commitment of applying it in a correct way on the WA of faculty members at Jordanian universities.

Universities are scientific and intellectual centers that are resorted to in order to solve the most difficult problems facing society, and credited for the superior technological innovation and the highest qualified personnel in the world (Faris, 1426 H; Mahjoub, 2003), and the key element to achieve this vision are the faculty members at universities. Therefore it is important to shed the light on issues that they could suffer from, such as WA and its causes, which have been determined in this study by R&I, in addition to the importance of the faculty members role in a process of education at universities and their substantial contribution in improving educational outcomes, which required more attention from the universities management in creating a suitable work environment, that makes the faculty members feel more comfortable to perform in a high level, and feel less alienation in their work.

A considerable body of research deals with WA, causative factors and the factors that are resulting of it, and it is viewed in many studies as a mediator variable influenced by some factors and affects another, but no study has examined simultaneously the associations among WA and R&I variables in a universities context. Therefore, this paper will examine each of these variables to provide, on one hand, the operational clarity, and on the other hand, theoretical and empirical evidence for the association of these variables.

Therefore, the importance of this study is that it addresses one of the issues affecting the essence of institutions in general, which is the WA of faculty members at the Jordanian universities, since there is no study nationally or internationally associate between the universities R&I on one hand and the WA of faculty members on the other hand, the results of this study might help to obtain real information that helps universities management to understand the reality of faculty members WA, and help decision-makers in reducing alienation of them. In addition, there is a possibility to benefit from the results of this study at other higher education institutions, both inside and outside Jordan, as an indication of the importance of faculty members WA which expected to affect their performance.

STATEMENT OF THE PROBLEM

This study examined the suitability of the universities R&I, the commitment of universities management of applying it in a correct way, and the WA (i.e. powerlessness, meaningfulness, self-estrangement, normlessness, social isolation) of faculty members at the Jordanian universities. Therefore the main query of this study is:
What is the effect of the suitability of the universities R&I, and the commitment of universities management to apply it in a correct way, on the WA of faculty members at Jordanian universities?

To answer the research question, the faculty members views of the suitability of the universities R&I, the commitment of universities management to apply these R&I in a correct way, and the degree of WA have been measured through a questionnaire which was distributed among the study sample of faculty members at Jordanian universities.

THEORETICAL BACKGROUND

The emergence of new alienation theory to cope with new forms of alienation as a concept, can be retraced at least 2000 years ago to the Romans and the Gnostics. In modern times, the concept surfaced again in the nineteenth century and owes its resurgence largely to Marx (Geyer, 1998). Although the latter did not deal with alienation explicitly, though processes of globalization and internationalization tended to monopolise people's attention during the last few decades (Geyer, 1998).

Marx developed his theory of alienation against the backdrop of Hegel’s philosophy of ‘absolute spirit’. Hegel saw history as the progression and transformation of an abstract human spirit (De Vries, n.d). Hegel view that alienation and the reality of existence is rooted in human existence, and that there is schizophrenia inherited between the individual as a creative news coming, want to be existing and between the individual as a subject located under the influence of others and exploitations (Al-Mhamadawi, 2007). Marx rejected Hegel’s idealism and instead of that gave a thoroughly materialist account of history. For Marx, it is not the consciousness of men that determines their existence, but their social existence that determines their consciousness. Thus, alienation is not a psychological phenomenon but proceeds from an actual economic fact. Specifically, it is the result of how labour is organised under the capitalist system, that, within the capitalist mode of production, workers invariably lose determination of their lives and destinies, and they never become autonomous, self-realized human beings (De vries, n.d; Marx theory of alienation; Tummers, Bekker & Steijn, 2009). Marx focused on objective WA; workers are alienated when they do not own the means of production or the resulting product. For Marx, labour is what makes us human. Alien labour is, therefore, not voluntary but forced, it is forced labour, in that it is not engaged in for its own sake but motivated by external reasons, and does not produce that which has been imagined by the worker but by the person who owns the labour. Thus, alienation, and specifically alienation from our humanity, entails a loss of freedom (De Vries, n.d).

The introduction of new technologies into the advanced capitalist work process continues to provoke sharp theoretical debate. While mainstream theories predict an upgrading of work content, recent Marxist analysis argue that workplace automation tends to deepen the subordination of the worker beneath the means of production. The study of Vallas (1988) aims to adjudicate between these rival perspectives upon the communications industry in the United States, a highly automated knowledge industry. Official statistics on the changing occupational structure of this industry, combined with survey data on job content, indicate the existence of an upgrading effect between 1950 and 1980. In more recent years, it is found that the more automated the workplace, the less autonomous and conceptually demanding the job tends to be.

Most contemporary sociologists writing on alienation draw on Marx (Blau ner, 1964; Seeman, 1959; Shepard, 1971), although, in contrast to Marx, they focus on subjective WA; alienation as perceived by the worker (Tummers et al, 2009). In the social sciences context, alienation defined as the state of feeling estranged or separated from one's milieu, work, products of work, or self. In other contexts the term alienation, can suggest a sense of powerlessness, meaninglessness, normlessness, social isolation, or self-estrangement brought on by the lack of fitness between individual needs or expectations and the social order. In a study by Al-Mhamadawi (2007) aims to investigate the relation between alienation and self-adjustment, the results confirmed these concepts that it showed a negative relation between the alienation and self-adjustment.
New types of alienation have entered the scene that are caused by the increasingly accelerating complexification of modern societies. Thus, alienation will always be there, but at least alienation theory can help to discover what one can do about the evitable alienations (Geyer, 1990).

Along with this concept, many researchers confirm the existence of alienation between workers in different sectors; Meddish (2006) found that the WA between the supervisors in Taiz exists, and it is back to job (Educational management), and the findings of Hasinoff study (1993) show that to some degree teachers are alienated along the dimensions of alienation. Hussein (2006) found that 57.6% of employees who are working in the capital secretariate fall within medium and high level of alienation, while the results of Althobaiti study (n.d) in the city of Jeddah indicates that public organizations employees have a moderate level of WA at the rate of 68.8%, and the result of Nair&Vohra study (2010) in six different organizations in the information technology sector in India, showed that 20% of the sample was found to be alienated from work.

The development of life and the concomitant complications in its different aspects influenced directly the psychology of the individual and behaviors, where Rousseau view that civilization robbed of one's own and made him a slave to social institutions established by him, and he is becoming subordinate to it, and here he loses the organic harmony, as is the case in state of nature, then problems happen between what the human should be and what he is actually, and thus alienation occurs (Al-Mhamadawi, 2007).

Alienation is defined by Ludz (1973) and Otto and Featherman (1975) as an individual's subjective feeling that his success is hindered or frustrated by opposing forces even though he may share the same norms regarding goals and means of achieving them with the dominant society. Perkins (1982) defined alienation as the individual's sense of estrangement from or feeling of being foreign in relation to some referent, and he also pointed out that alienation could be situational or global. In other words it is left for the researcher to determine what the individual is alienated from (Nnekwu, 2007). Alienation at the workplace refers to that employees may not be able to fulfill their social needs, and they have a form of gap between perceptions of an objective work situation and their certain interests such as values, ideals, and desires (Sulu, Celan& Kaynak, 2010). In his study, Hussein (2006) agreed with this idea that he found a negative correlation between WA and employees needs (material, social, and psychological needs).

WA refers to work conditions that separate the working person from the enjoyment of work products, work processes, social interaction, and realization of talents, and deprive the worker of essential outcomes comprising access to the fruits of production, control over work processes, interacting with co-workers and customers, and realizing the worker's potentialities and talents. WA is thereby a work stress that encompasses work control, powerlessness, and demands that defy the working person's potentialities and talents (Chau-Ku, 2008). A result of the absence of autonomy and control in the workplace, workers may experience alienation. Alienation decreases the motivation of workers, psychologically separates them from work and acts to reduce work involvement (Sulu et al, 2010).

Many researchers made efforts to identify some factors related to person alienation at work, for example; Sarros, Tanewski, Winter, Santora& Denston (2002) found that transformational leadership was associated with lower WA, whereas transactional leadership was associated with higher WA, while organizational structure was not significantly predictive of WA. Banai& Reisel (2007) found that supportive leadership and job characteristics were related to alienation between workers in Cuba, Germany, Hungary, Isreal, Russia, and the United States, while the study by Banai, Reisel& Probst (2004) in five companies found that leadership, job characteristics, and individual locus of control explained work-related alienation. In their study, Michaels, Corn, Dubinsky& Joachimsthaler (1988) found that higher levels of formalization are found to be associated with greater organizational commitment and less WA, and the study of Althobaiti (n.d) reached that the lack of objective rule, undesirable routine procedures, not willing to sharing information with others, unfair rewards and incentive are the more risk factors of alienation. While the findings of the Nnekwu study (2007) showed that ethnicity or religious affiliation make no significant contribution to the explanation of staff alienation from co-workers, from friends at work, and from job in Nigerian universities.
Other researchers studied the WA as a mediated variable, for example, the results of Cylan & Sulu study (2010) revealed that each of the WA dimensions (powerlessness and social isolation) partially mediated the relationship between the procedural injustice and job stress. And the results of Sulu et al study (2010) revealed that the WA dimensions also, partially mediated the relationship between organizational injustice and organizational commitment. The results of Johnson & Ellett study (1992) supported a positive correlation between the degree of centralization and the degree of teacher WA. The results also shows that when the effects of alienation were statistically controlled, the magnitude of the relationship between centralization and effectiveness was considerably reduced. It has generally been found that alienation in one social institution for an individual may not necessarily mean alienation of that same individual in other social institutions (Nnekwu, 2007).

Research has succinctly demonstrated the adverse impacts of WA on such outcomes as job dissatisfaction, life satisfaction, burnout, work strain, and commodity fetishism. Conversely, the reverse of powerlessness in terms of job autonomy has proven to diminish job dissatisfaction, create role overload, self-derogation, unsafe work behavior, disengagement from work, inadequate coping, and inadequate job performance (Chau-Ku, 2008).

Hirschfeld, Feild & Bedeian (2000) found that WA explained incremental variance in selected workplace adjustment variables (i.e., job involvement, affective organizational commitment, affective occupational commitment, overall job satisfaction, and volitional absence), and Hasinoff (1993) found that alienation has an effect on professional identity, while the study of Walsh (1982) shows that the linking between work dissatisfaction and general alienation received little support from collected data, and the study of Walsh & Rosenthal (1981), findings shows that a direct relationship between occupational prestige and alienation were not supported by collected data. In a study by Chisholm & Cummings (1979), the results indicate a lack of relationships between the nature of jobs and experienced WA and a broad pattern of relationships exists between alienation from work and measures of work-related behavior. The results of the study of Coburn (1979) reveals a weak relationships between work perceived as monotonous and general psychological and physical well-being and between alienation as job-worker incongruence and health.

Thus, identification and study of the factors and causes of work WA seems very important to the institutions outcomes. Therefore the interest of this study is to come up with perceptions of some factors might affect the faculty members WA like R&I that regulate their jobs at Jordanian universities. To achieve the purpose of the study the author rely on Seeman classification (1971) of the alienation dimintions as follow:

1. Meaninglessness: refers to information processing problems on the input side, where "incoming information" is viewed as meaningless (Geyer, 1990). The literature also suggests that the work conditions of meaninglessness are another important determinant of self-estrangement in work (Kohn, 1976; Seeman, 1975). Unlike powerlessness, which refers to descriptions of work conditions and processes, meaninglessness is the employees’ description of his or her integration into the work process (Horton, 1964). More specifically, meaninglessness exists 'when workers feel they contribute little to the overall production process and hence do not see the significance of their role in it (Mottaz, 1981). If job tasks are seen as dull, boring, unchallenging, and separate from other work activities, then employees might feel their work contribution is meaningless. A state of meaninglessness at work will contribute to an overall feeling of estrangement from the work process (Geyer, 1990). Nair & Vohra (2010) found that the strongest predictors of WA were found to be lack of meaningful work, inability of work to allow for self-expression, and poor quality work relationships.

2. Powerlessness: refers to problems on the output side, since power is usually defined as the capability to decrease (or increase!) the individual's alternatives for acting on the environment (Geyer, 1990). Powerlessness is the absence of control over events in a person’s life and an employee’s inability to control work process at the workplace. Powerlessness means that one has no influence on decisions. Many studies have emphasized the negative consequences of feelings of powerlessness. To provide employees to access resources and determine their roles increases
sense of power. Equitable distribution of resources and job autonomy are likely to enhance an individual's sense of power (Sulu et al, 2010). According to Kakabadse (1986), powerlessness represents 'the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes, or reinforcements, he seeks. In other words, powerlessness can be equated with a lack of job autonomy and participation, employees have limited freedom (within the prescribed task domain) to exert control over work activities (Aiken and Hage, 1966; Ashforth, 1989; Mottaz, 1981).

3. Self-estrangement, the most psychiatric dimension: refers to problems in what can be called the state functions, roughly, the system's memory, where "raw", relatively uncoded past experiences are stored, considered repressed in the psychoanalytic treatment of alienation (Geyer, 1990). Self-estrangement is a critical dimension in the WA literature, where it tends to be associated with the task conditions of powerlessness and meaninglessness (Blauner, 1964; Seeman, 1975). Self-estrangement can occur when the work process is perceived as alien to the individual, and independent of his contributions. Aspects of the formal work system reinforce the importance of functional roles and responsibilities to the organization; external rewards serve to limit the creative contributions of employees. In this environment, employees might lack an intrinsic fulfillment in work and express feelings of self-estrangement (Mottaz, 1981). Self-estrangement at work has been associated with job tasks that are narrow in scope and depth i.e. unable to provide employees with acceptable levels of intrinsic job engagement and fulfillment. The results of Mottaz study (1981) suggest that individual work values interact with perceptions of the work situation to produce different levels of self-estrangement, and that job conditions are important factors for explaining feelings of self-estrangement. In particular, lack of control over task activities (powerlessness) and lack of meaningful work (meaninglessness) are found to be the most powerful predictors.

4. Normlessness: refers to problems in the decisional functions, which contain a representation of the relevant information the individual has collected in all the situations he has ever been in; the decisional functions can be said to contain: an environment mapping, a value (goal) hierarchy, and procedural rules. Indicating what to do given a certain image of the environment and certain goals (Geyer, 1990).

5. Social isolation: refers to a relative absence of inputs and outputs. A socially isolated employee is not supported or helped by his or her colleagues or supervisors. Employees have not enough inclusion and socially acceptance at workplace and perceive that they have a lack of integration with their coworkers, their occupation, or the organization they work (Geyer, 1990). Workplace isolation is a psychological construct which defines perceived isolation of employees’ from the organization and coworkers. Workplace isolation has two dimensions, namely organization isolation and colleague isolation. Organization isolation refers how much supervisor and the organization support employees and how well employees' contributions are taken into consideration. On the other hand, colleague isolation means how isolated an employee feels from colleagues and other workers (Sulu et al, 2010).

Based on the situation on the ground, this study decided to work with faculty members alienation that affected by universities R&I, since R&I from casual observation tended to suggest that these factors were bound to affect feelings of the faculty members of alienation.

RESEARCH DESIGN & METHODOLOGY

Research Questions & Hypotheses

Tow questions and two hypotheses are derived from the main study query:
Q1: To what extent the faculty members at Jordanian universities believe that R&I are suitable for their work, and the universities management committed to applying these R&I in a correct way?
Q2: To what extent the faculty members at Jordanian universities feel alienation at Work?

H1: The suitability of R&I, the academic rank, and the type of university have a significant statistical effect on the WA of the faculty members at Jordanian universities.

H2: The universities management commitment of applying R&I in a correct way, the academic rank, and the type of university have a significant statistical effect on the WA of the faculty members at Jordanian universities.

Assessment of Variables
A questionnaire was used to assess:

1. The independent variables:
   a- The suitability of Jordanian universities R&I.
   b- The universities commitment of applying R&I.

2. Moderating variables:
   a- Academic rank of the faculty members.
   b- The type of the university

The dependent variable: The WA of the faculty members at Jordanian universitie.

Data Collection
This study is a causal study, and to achieve the objectives of it, the survey strategy used to carry out this study in five Jordanian universities (2 of them are public, and 3 are private) selected randomly by using a simple random sample of nearly 20% of the total number of the Jordanian universities, which is 27 university (10 public, 17 private). The study sample included 20% of the faculty members in the five selected universities. This sample selected randomly by using random stratified sample in each university according to the academic rank of the faculty members. The sample size was determined according to the opinion of the specialists in research methods as, Alnajar, Alnajar & Alzoubi (2010) who suggested that the sample size in multivariate research should not be less than ten times of the number of the study variables.

The distribution and collection of the questionnaire took about two months at the beginning of 2011.

Table (1) shows the study population, sample and response rate of the study sample.

<table>
<thead>
<tr>
<th>Type of university</th>
<th>Population</th>
<th>Sample</th>
<th>No of Responses</th>
<th>% of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>1293</td>
<td>260</td>
<td>194</td>
<td>74.6%</td>
</tr>
<tr>
<td>Private</td>
<td>562</td>
<td>114</td>
<td>95</td>
<td>83.3%</td>
</tr>
<tr>
<td>Total</td>
<td>1855</td>
<td>374</td>
<td>289</td>
<td>77.3%</td>
</tr>
</tbody>
</table>

Study Tool
A questionnaire was constructed and used by the researcher to achieve the purpose of the study. This tool includes three sub-measures all of which are dealt with in this paper:

First. The measure of the suitability of R&I. It includes 30 items.
Second. The measure of the universities management commitment of applying R&I in a correct way. It includes 30 items (same items were used in the first and second sub measure).
Third, The measure of the WA of the faculty members. It includes 40 items distributed over five areas: powerlessness (item 1-8), meaningless (item 9-16), self-estrangement (item 17-24) normlessness (item 25-32), social isolation (item 33-40), (See sample of the items of the three sub measures – appendix 1). The respondents answers were obtained by using Leckert quintuple scale as follows:
(1) A very high degree (2) High degree (3) Average degree (4) low degree (5) very low degree

Validity & Reliability
The validity has been reached by presenting the questionnaire to a number of specialized referees. It was presented to 16 referees specializing in psychology, sociology, management, educational administration, and English language at Yarmouk University, Jadara University, Al-Balqa’ Applied University.
Cronbach's Alpha value was used to assess the internal consistency of the research three sub-measures, which were (0.91), (0.90) and (0.94) for the first, second and the third respectively. These values confirmed the high reliability of the questionnaire. After data collection, it was analyzed using statistical packages programs of social sciences SPSS. Means and percentages were used to answer the first and second question, and multiple regression analysis to test the first and second hypotheses.

RESULTS AND DISCUSSION

Q1: To what extent the faculty members at Jordanian universities believe that R&I are suitable for their work, and the universities management committed to applying these R&I in a correct way?

To answer this question, means were calculated regarding the two sub-measures shown in table 2 to reach the level of the study sample believes about the suitability and the commitment of applying R&I in a correct way. Frequencies, and percentages were reached also by dividing the study sample answers to three levels; high (30-69), moderate (70-110), low (111-150).

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>MEANS, FREQUENCIES, AND PERCENTAGE OF THE STUDY SAMPLE RESPONSES FOR THE FIRST AND SECOND SUB-MEASURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Variables</td>
<td>First Sub- Measure</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Rank</td>
<td>Assistant Prof</td>
</tr>
<tr>
<td></td>
<td>Associate Prof</td>
</tr>
<tr>
<td></td>
<td>Professor</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Type of University</td>
<td>Public U</td>
</tr>
<tr>
<td></td>
<td>Private U</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Levels of the responses</td>
<td>Frequencies</td>
</tr>
<tr>
<td>High</td>
<td>30</td>
</tr>
<tr>
<td>Moderate</td>
<td>231</td>
</tr>
<tr>
<td>Low</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>289</td>
</tr>
</tbody>
</table>
First Sub-Measure

Table 2 shows that the total mean (3.05) and all means according to the academic rank, and the type of university are close to the mid-premise which is 3. This means that the suitability of R&I from the point of view of the faculty members at Jordanian universities is moderate. This result indicates that there is no difference in the view of the faculty members towards the suitability of the R&I according to their academic rank or the type of their universities; this might be pointing to a big similarity between Jordanian universities in their R&I. The same table shows that most of the faculty members (259 persons, 89.6%) believe that R&I are suitable in a moderate or low level, while the individuals who believe that it is suitable in a high level are much lesser (30 person, 10.4%). Therefore, I can say that means, frequencies, and percentage reflect the dissatisfaction of the faculty members at the public and private universities of the suitability of R&I that regulates their work, and they believe that it should be better to meet their needs and aspirations.

Second Sub-Measure

Table 2 shows that the total mean (3.10) and all means according to the academic rank, and the type of university are very slightly higher than the mid-premise which is 3. This means that the university management commitment of applying R&I in a correct way from the point of view of the faculty members at Jordanian universities is slightly less than moderate. This result indicates that there is a little difference in the view of the faculty members toward the commitment of applying the R&I according to their academic rank, and the type of university, that professors seems to be more dissatisfaction than associate or assistant professors, and the faculty members at the private universities also, seems to be more dissatisfaction than public universities. The same table shows that the most of the faculty members (268 persons, 92.7%) believe that the universities commitment of applying R&I are in a moderate or low level, while the individuals who believe that the commitment in a high level are much lesser (21 person, 7.3%). Thereby, I can say that means, frequencies, and percentage reflect the dissatisfaction of the faculty members at the public and private universities of the universities management commitment of applying R&I that regulate their work, and they believe that it should be better to meet their needs and aspiration.

Laws and R&I forms the legal dimension of the organizations environment of the various institutions, including universities, in addition to other dimensions such as; Administrative policies, organizational structure, technology used, the external environment, and the pattern of relationships and communication within the universities prevailing environment (Altaweel, 2006). These R&I governing the work of the faculty members in terms of rights and duties associated with their work, therefore, the results that was reached to answer the first question in the first sub-measure (table 2) reflects that, these R&I did not reach the level of professionalism convinced the faculty members and might be considered the appropriate legal framework to protect their interests and rights. This may be due to that Jordan, like other developing countries is subject to many pressures, namely the lack of financial resources in various sectors, including universities, which is considered the actual obstacle to the development of R&I to fit the scientific position of faculty member and their efforts comparing with others at developed countries, since any development of these R&I means more spending. For example, the payroll system, retirement pension, overtime, and health insurance..etc, which is under significant criticism. Sometimes the faculty member's salary does not match the salary of a university graduate working at private sector.

There is no difference in this situation between the public and private universities, as Ph.D holders in Jordan are large, with a little demand on them, especially in the field of humanities, therefore, individuals accept the work without convinced of features of this work, which cause many of a negative feelings as; alienation in the workplace, lack of control over things, apathy, lack of sense of loyalty and belonging, psychological and social isolation, in addition to Low level of performance, satisfaction, and participation. In general, The interest in the elements that form the organizational universities environment, as, R&I is very important because of its reflection on the work environment at the individual and collective level, it is either contribute in creating a healthy environment able to cope with the problems facing the work, and improving the universities outputs, or could help in creating unhealthy environment that hinders the process of achieving the goals of universities (Almograbi, 2000).
The result of the second sub-measure (table 2) points out that the dissatisfaction of the faculty members for not applying the R&I in a correct way is higher than their believes of its suitability. This, because the concept of applying something in a correct way connected in many ways to other concepts like; justice, objectivity, integrity, equality etc, which illustrate the point of view of the study sample.

The lack of satisfaction of faculty members for not applying the R&I in a correct way, may be, caused by that the management model prevails in the institutions, including universities, in developing countries in general as Jordan, is a management by corruption, or as Max Weber named; the traditional model. This model prevails in the societies which suffer from the lack of Institutional work, and it is not based on a high intrinsic values, but in fact dominated by chaos, corruption, and giving priority to the personal benefits is above the public benefits (Asaf, 2005). Many Jordanian universities makes attempts to apply more advanced management models, such as, management by sufficiency, management by efficiency, or management by effectiveness as; a total quality management. But, the model of management by corruption remains permeates these attempts, because the social culture which is based on the pressure on decision-makers through nepotism and favoritism are a real hindrance to any attempts to advance the university management to be more scientific and objective, so it will be found that faculty members are suffering from this situation, which is leading to a negative feelings in terms of justice, and the preservation of their rights, and may feel alienation at work. Many examples reflect the incorrect application of R&I as; excesses in the appointments, terms of academic promotion, financial support of scientific research and conferences, training, recruitment in the administrative positions, and renewal contracts for farther academic period of the retirement age etc. All of these excesses can be done through social connections with influential officials in the university. The non-application of R&I fairly, create a sense of frustration, dissatisfaction, and alienation, which negatively affects the faculty members productivity and their behaviors, so, they are starting to practice some of unacceptable behaviors to achieve their goals and interests.

Q2: To what extent the faculty members at Jordanian universities feel alienation.

To answer this question, means were calculated regarding the third sub-measure shown in table 3 to reach the level of the study sample WA. Frequencies, and percentages were reached also by dividing the study sample answers to three levels; high (40-93), moderate (94-146), low (147-200).

Third Sub-Measure

Table 3 shows that the total mean (2.68) for the third sub-measure (WA) is less than the mid-premise which is 3. This indicates that the WA from the point of view of the faculty members at Jordanian universities is higher than moderate. In view of the alienation areas means, it found that the area of powerlessness get the lesser mean (2.41) and the area of normlessness get the higher mean (3.02). This points to that powerlessness is the largest source of alienation, followed by self-estrangement, and then meaningless, followed by social isolation, and the smallest source is normlessness.

According to the academic rank, the same table shows that the lesser mean (2.53) back to the associate professors, followed by the assistant professors, where is the higher one (2.93) back to the professors. This mean that the associate professors feel alienation at work more than the other academic ranks. As for the type of university, the lesser mean (2.65) back to the public universities, which mean that WA of faculty members at the public university is slightly higher than those at private universities. The same table shows that the most of the faculty members (266 persons, 92%) feel alienation in a moderate or high level, while the individuals who feel alienation in a low level are much lesser (23 persons, 8.0%). Thereby, i can say that means, frequencies, and percentage reflect the existence of alienation at work for the faculty members at the public and private universities.
TABLE 3
MEANS, FREQUENCIES, AND PERCENTAGE OF THE STUDY SAMPLE RESPONSES FOR THE THIRD SUB-MEASURE (WORK ALIENATION)

<table>
<thead>
<tr>
<th>Third Sub-Measure WA Areas</th>
<th>N</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Powerlessness</td>
<td>Meaninglessness</td>
<td>Selfestrangement</td>
<td>Normlessness</td>
<td>Social isolation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Academic Rank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant Prof</td>
<td>160</td>
<td>2.34</td>
<td>2.55</td>
<td>2.55</td>
<td>3.08</td>
<td>2.83</td>
<td>2.67</td>
</tr>
<tr>
<td>Associate Prof</td>
<td>81</td>
<td>2.30</td>
<td>2.50</td>
<td>2.41</td>
<td>2.94</td>
<td>2.53</td>
<td>2.53</td>
</tr>
<tr>
<td>Professor</td>
<td>48</td>
<td>2.80</td>
<td>3.08</td>
<td>2.83</td>
<td>2.95</td>
<td>2.99</td>
<td>2.93</td>
</tr>
<tr>
<td>Total</td>
<td>289</td>
<td>2.41</td>
<td>2.62</td>
<td>2.55</td>
<td>3.02</td>
<td>2.78</td>
<td>2.68</td>
</tr>
<tr>
<td>Type of University</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public U</td>
<td>194</td>
<td>2.33</td>
<td>2.60</td>
<td>2.54</td>
<td>3.07</td>
<td>2.73</td>
<td>2.65</td>
</tr>
<tr>
<td>Private U</td>
<td>95</td>
<td>2.57</td>
<td>2.67</td>
<td>2.59</td>
<td>2.91</td>
<td>2.86</td>
<td>2.72</td>
</tr>
<tr>
<td>Total</td>
<td>289</td>
<td>2.41</td>
<td>2.62</td>
<td>2.55</td>
<td>3.02</td>
<td>2.78</td>
<td>2.68</td>
</tr>
<tr>
<td>Levels of the responses</td>
<td></td>
<td>Frequencies</td>
<td>Percent%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>93</td>
<td></td>
<td>32.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>173</td>
<td></td>
<td>59.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>23</td>
<td></td>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>289</td>
<td></td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the third sub-measure (table 2) confirmed through many studies which reached the existence of alienation in many sectors and different samples (Althobaiti, n.d; Hasinoff, 1993; Hussein, 2006; Medhish, 2006; Nair & Vohra, 2010). This mean that faculty members at universities are like others, can be alienated at work for many reasons such as: The faculty members perceived challenges of the functions of the work, which can arise and turn out to be great difficulties in work brings boredom and meaninglessness, In addition to the organization of the work and the environment at universities, as the exaggerated means a lot of laws, regulations, instructions, and procedures which lead to the emergence of fatigue and stressful for the faculty members. And also, the social consolidation of the work environment, as maximizing it may lead to increased irritation and collision with others emotions, and loss of autonomy, and minimizing it may cause isolation and lack of support, and finally, the compatibility and harmony of the work at universities, values, standards and goals, as many of them lead to the lack of vision for the outcomes and endings, and a few of them may lead the individual to do things against his conscience and non-standard, and they are not compatible with social norms and contrary to the community laws. This existence of alienation may cause some negative effects as; Loss of creative and innovation, loss of pleasure and work motivation, decrease in the impact and effectiveness, conflicts and isolation, resistance to change, even though the change for the better, and lack of or reduction in quality of life and personal acceptance and self-satisfaction.

The same results (table 2) shows that the associate professors are more alienated than other ranks, and faculty members at the public universities are more alienated than the private. This may be explained by that associate professors fall in the middle of experience, and age, and their future expectations are much higher than others, because they are seeking seriously to be promoted to the professor rank, which is important in the society of Jordanian universities because it opens broad prospects especially for work in other countries such as the Gulf countries. Therefore, holders of this rank has been affected by different variables in the work environment that cause WA more than the other ranks.

Also, the faculty members feelings of alienation in public universities which is more than the private universities, may explain, that the control, follow-up, and the degree of obligation to follow the laws and
regulations are more than in private universities. In addition to that the proportion of turnover in work in the private universities are larger than public one, so the faculty member at private university testing different environments, while, faculty member at the public university remains committed to work for it for a long time, which mean the remains of the same factors that cause alienation for them.

**H1**: The suitability of R&I, the academic rank, and the type of university have a significant statistical effect on the WA of the faculty members at Jordanian universities.

To test this hypothesis, multiple regression analysis was used as shown in Tables (4-6).

### TABLE 4
MODEL SUMMARY- THE IMPACT ON (WA)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Multi Correlation Coefficient- R</th>
<th>R-Square</th>
<th>R-Square Change</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitability of R&amp;I, Rank, Type of university</td>
<td>0.277</td>
<td>0.077</td>
<td>0.067</td>
<td>0.610</td>
</tr>
</tbody>
</table>

### TABLE 5
REGRESSION VARIANCE ANALYSIS (WA)

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F Value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>8.828</td>
<td>3</td>
<td>2.943</td>
<td>7.903</td>
<td>0.000*</td>
</tr>
<tr>
<td>Remaining</td>
<td>106.117</td>
<td>285</td>
<td>0.372</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>114.944</td>
<td>288</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.0

### TABLE 6
REGRESSION COEFFICIENTS (WA)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Non-standard Regression Coefficient</th>
<th>Standard Regression Beta</th>
<th>T Value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal Regression Coefficient-B</td>
<td>Std. Error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.297</td>
<td>0.235</td>
<td>14.044</td>
<td>0.000</td>
</tr>
<tr>
<td>R&amp;I</td>
<td>-0.287</td>
<td>0.064</td>
<td>-4.477</td>
<td>0.000*</td>
</tr>
<tr>
<td>Rank</td>
<td>0.083</td>
<td>0.048</td>
<td>1.739</td>
<td>0.083</td>
</tr>
<tr>
<td>Type of University</td>
<td>0.090</td>
<td>0.077</td>
<td>1.168</td>
<td>0.244</td>
</tr>
</tbody>
</table>

* P < 0.05

Table 4, shows that the three independent variables explain 7.7% (R-square value) of the variance of WA variable, while the remaining percentage refers to other unknown variables. To understand if R-square value has statistical significance, regression variance was analyzed (table 5), and it shows the presence of statistical significance at p < 0.000 level regarding the source of the three variables together. This result confirms that the impact of The suitability of R&I, the academic rank, and the type of
university on the work WA of the faculty members at Jordanian universities is clear. Table 6 shows regression coefficients of the three variables. It shows a negative statistical significant correlation between the independent variable; the suitability of R&I (p<0.000), and the dependent variable; the faculty WA, and there is no statistical significant correlation with the other variables. This statistical significance correlation indicated the importance of the correlation between the suitability of R&I, and the faculty members work alienation. This mean that if the R&I are not suitable, the faculty members WA will be existed and may excess the acceptable level. This confirmed by the strength of correlation (Beta value, -0.255) which is the higher one between the three independent variables, this result is natural due to the fact that this variable is the most influential among the three variables as shown by its statistical significance.

The results of this hypothesis show that the independent variables have statistical significance impact on the WA of the faculty members, which mean that this hypothesis was confirmed. The contribution of the independent variables in explaining the variance of the WA is logical (R² =7.7%), that feeling of alienation is a subject to a sociological and social factors, and there are hundreds of these factors may affect alienation of faculty members such as; university structure, style of leadership, management policy, relation with others, communication system at university, the university culture, changing and sophisticated technology, external environment (political, economical, and social) . In addition to the psychological factors such as; Negative self-perception and understanding, Conflict between the opposing motives and desires, frustration and its associated sense of disappointment, failure, and self-contempt and deprivation and the human being philosophy of his values which shape his behavior , and explain his life and his world in the light of some symbols and meanings associated with it, and without it, he might suffer a sense of alienation and loses his existence as a human being.

This statistical significance result emphasizes the importance of R&I that organizes the work of faculty members at universities and its effect on alienation of them. This means that the suitability of the R&I is a subject of query about, therefore, this result may stun the decision-makers in the various universities who believe that they have developed good and suitable R&I for faculty members. In other words, this significant result may go back to that R&I are affect directly the details of the faculty members career. So, if they see that it is unable to meet their needs and assist them in professional growth, It is expected that a sense of helplessness and a lack of control and harmony in the work environment will generate, which means alienation at work and a sense of separation from the university community and the values and norms prevailing, therefore feel of dissatisfaction which may lead to weakness in productivity and sense of belonging and loyalty.

Looking at results in table (6), there was statistical significance correlation between the R&I variable, and the WA variable. This can be explained according to the fact that R&I have direct effect on WA because of its importance in regulating and developing their career. This negative correlation means that more suitability of R&I less feeling of alienation. The none existence of statistical significance correlation among the rest variables (Rank, Type of university) and WA variable doesn't mean that there is no correlation, but this correlation is weak, this may refer to that these R&I are the same important and effect for the different faculty members ranks, and the two types of universities because they are working under the umbrella of the law of Jordanian universities No 20 for the year 2009.

**H2: The universities management commitment of applying R&I in a correct way, the academic rank, and the type of university have a significant statistical effect on the WA of the faculty members at Jordanian universities.**

To test this hypothesis, multiple regression analysis was used as shown in Tables (7-9).
Table 7 shows that the three independent variables explain 8.8% (R-square value) of the variance of WA variable, while the remaining percentage refers to other unknown variables. To understand if R-square value has statistical significance, regression variance was analyzed (table 8), and it shows the presence of statistical significance at p < 0.000 level regarding the source of the three variables together. This result confirms that the impact of the university management commitment of applying R&I in a correct way, the academic rank, and the type of university on the WA of the faculty members at Jordanian universities is clear. Table 9 shows regression coefficients of the three variables. It shows a negative statistical significance correlation between the independent variable; the university management commitment of applying R&I in a correct way (p<0.000), and the dependent variable; the faculty WA. And a positive statistical significant correlation between the independent variable; the academic rank (P<0.048), and the dependent variable, and there is no significant correlation back to the type of university. This statistical significance correlation indicated the importance of the correlation between the commitment of applying R&I, the academic rank on one hand and the faculty members WA on the other hand. This mean that if there is no commitment of applying R&I in a correct way, the faculty members

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Multi Correlation Coefficient-R</th>
<th>R -Square</th>
<th>R- Square Change</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities commitment of applying R&amp;I, Rank, Type of university.</td>
<td>0.297</td>
<td>0.088</td>
<td>0.079</td>
<td>0.606</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>10.147</td>
<td>3</td>
<td>3.382</td>
<td>9.198</td>
<td>0.000*</td>
</tr>
<tr>
<td>Remaining</td>
<td>104.798</td>
<td>285</td>
<td>0.368</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>114.944</td>
<td>288</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.05

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Non-Standard Regression Coefficient</th>
<th>Standard Regression Coefficient</th>
<th>T Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.382</td>
<td>0.235</td>
<td>14.364</td>
<td>0.000</td>
</tr>
<tr>
<td>Universities commitment of applying R&amp;I</td>
<td>-0.325</td>
<td>0.067</td>
<td>-0.278</td>
<td>-4.887</td>
</tr>
<tr>
<td>Rank</td>
<td>0.094</td>
<td>0.047</td>
<td>0.113</td>
<td>1.983</td>
</tr>
<tr>
<td>Type of university</td>
<td>0.114</td>
<td>0.077</td>
<td>0.085</td>
<td>1.494</td>
</tr>
</tbody>
</table>

*P < 0.05
WA will be existed and may be excess the acceptable level. Also the positive correlation between academic rank and the WA means that the higher academic rank of faculty member, the largest feeling of alienation. This confirmed by the strength of correlation of the commitment of applying R&I (Beta value; -0.278) which is the higher one between the three independent variables, this result is natural due to the fact that this variable is the most influential among the three variables as shown by its statistical significance, followed by the academic rank (Beta value; 0.113).

The results of this hypothesis showed that the independent variables have statistical significance impact on the WA of the faculty members, which mean that this hypothesis was confirmed. The contribution of the independent variables in explaining the variance of the WA is logical ($R^2 =8.8 \%$), that, as i mentioned before, feeling of alienation is a subject to a sociological and social factors, and there are a hundreds of these factors may affect alienation of faculty members.

This statistical significant result emphasizes the importance of applying R&I in a correct way at universities and its effect on alienation of them. This means that applying R&I in a correct way is a subject of query about, in other words, this significant result may back to that R&I which affect directly the faculty members career are applied improperly. So, if they see that it is unable to meet their needs and assist them in professional growth, It is expected that faculty members may feel many things as; a sense of injustice resulting from the bias in the dealing, low confidence in the universities management, a feeling of jealousy and hatred between colleagues, resorting to methods of illegal access to the targets, frustration, poor performance caused by the feeling that good performance will not make a difference, but the relation with management have the strongest effect, that applying these R&I are different according to this relation and its strength, in addition to faculty member's ability to exercise social pressure on university management. All these feelings and actions will lead the faculty members to feel alienation at work place.

Looking at results in table (9), there was statistical significance correlation between the commitment of applying R&I in a correct way, rank variables and the WA variable. This can be explained according to the fact that applying R&I in a correct way have direct effect on WA because of its important to regulate and develop their career, and generate feeling of justice. This negative correlation mean that more commitment of applying R&I in a correct way less feeling of alienation. The positive significance correlation between the rank of faculty members variable and WA variable mean that highest rank more feeling of alienation, this may be result from the higher expectations of the faculty members that the higher rank will deal with it more respectively and objectively, and the universities managements will discriminate between faculty members and meet their needs according to their ranks. At the ground this does not happen, a faculty member in a lower rank may reach his needs more than one in a higher rank, this because, as i mentioned before, nepotism and favoritism is stronger than anything else, such as efficiency, or academic rank. The none existence of statistical significance correlation among the type of university and WA variables doesn't mean that there is no correlation, but this correlation is weak, this may illustrates, that applying R&I at public and private universities are subject to the same social pressures which form the culture of Jordanian society, where there is a belief among many of them that they cannot gain access to what they want without exercising pressure on the decision makers.

**Recommendations and Suggestions**

Based on the findings of the study, the researcher recommends that:

1. Universities should review the R&I and take the views and suggestions of the faculty members into account.
2. Universities should make more efforts in applying the R&I in a correct way to ensure more justice and belonging to the teaching profession.
3. Universities should identify the factors that cause WA of faculty members and try to reduce these feelings by addressing the reasons.
4. Similar studies may be carried out in other universities outside Jordan to identify the status of the WA of the faculty members in these universities.
CONCLUSION

This study deals with two questions and two hypotheses, focusing on the effect of the suitability of R&I, the commitment of the universities management in applying R&I in a correct way on the faculty members WA at Jordanian universities. If universities want to reduce alienation of faculty members in order to improve their performance and productivity, and meet their needs, they should pay attention to the suitability of R&I, applying it in a correct way. This study aims at starting a practical study on faculty members perceptions of the suitability of R&I, and the extent of universities management commitment in applying these R&I. It is also aims at identifying whether these suitability of R&I and the commitment of applying it in a correct way have an effect on the WA of faculty members.

Understanding faculty members WA status at Jordanian universities might be an indicator to some extent, for researchers, and the people interested in this subject to do further researches in this field. Data was collected from faculty members in five universities (the study sample; two public and three private) from different academic rank (professor, associate professor, assistant professor), by using a questionnaire to measure the three variables of the study (suitability of R&I, commitment of applying R&I in a correct way, WA).

Referring to the outcomes of this study, it is clear that the suitability of R&I in the Jordanian universities is moderate, the university management commitment of applying R&I in a correct way at Jordanian universities is slightly less than moderate, and the WA of the faculty members at Jordanian universities is higher than moderate.

In contrast, the effect of the suitability of R&I, and the university commitment of applying R&I on the WA of faculty members is clear and has statistical significance, as shown by the regression analysis. From the foregoing ideas, we can deduce that the status of WA in the two types of universities is convergent.

This encourages researchers to conduct further research on this subject at Jordanian universities by trying to study another factors in the university environment that may affect the alienation of faculty members, and identify the important of these factors and its effect on WA. Furthermore, these results encourage researchers to study this issue in other institutions as it is a psychology and social subject that has not been adequately understood.

NOTES

¹ This work has been carried out during sabbatical leave granted to dr. dalal mohamed al-zoubi from Al-Balqa' Applied University (BAU) during the academic year 2010/2011.

² Dalal M Al-Zoubi is an associate professor in the educational science department, Irbid college, Al-balqa applied university, Jordan. She graduated from Amman Arab university for graduate students, with PhD in educational administration. Her main research interests are in the field of higher education studies, such as, the utilization of knowledge management, the successful use of knowledge management in teaching and learning, in addition to the academic issues and students learning. Dr Zoubi has published many papers in international and national journals, as well as in various international and national conference proceedings. She has taught several courses for the BA and masters' degree. Dr. Zoubi has taught in more than one university and occupied the position of assistant dean for students affairs, financial affairs, educational affairs in Irbid college, Al-balqa applied university for ten years.

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APPENDIX

Sample of items:

First and Second Sub-Measurs:
1. Teaching load for different academic ranks (theoretical and practical).
2. Classification of the scientific production for promotion and the weight given for each type.
3. The number of points required for promotion from academic rank to another.
4. Conditions of scholarships for scientific degree and its procedures.
5. Fit value of financial support for scientific conferences and the real cost of it.
6. Diseases covered by health insurance and the exceptions of it.
7. Reward value at the end of service and how it calculated.
8. Basic salary and bonuses of different academic ranks.

Third Sub-Measure:
First Area: powerlessness
1. I don’t know what is my goal in life.
2. I feel that I have no choice in determining my future career.

Second Area: Meaningless
1. I do not enjoy my life in the work environment.
2. I feel that my aspirations decrease over time.

Third Area: Self-estrangement
1. I prefer work in other places than the university where I work.
2. I feel that the university community lacks friendship.

Fourth Area: Normlessness
1. I have difficulty in distinguishing right from wrong.
2. I feel that the rules and regulations do not apply fairly.

Fifth Area: Social isolation
1. I prefer to keep my views to myself
2. I admire people who go out of the ordinary.