ORGANIZATIONAL JUSTICE AND STRESS: AN INVESTIGATION OF THE JUSTICE SALIENCE HIERARCHY USING THE FOUR-FACTOR MODEL

by

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ABSTRACT

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Utilizing survey methodology, the four-factor model of organizational justice was assessed, including distributive, procedural, interpersonal, and informational justice, as well as their relationships with overall perceived and work-related stress. In addition to the hypothesized relationships of each justice dimension and stress, this study investigated the Justice Salience Hierarchy (JSH) as proposed by Greenberg (2004). Confirmatory factor analyses indicated a reasonable fit of the four-factor model of justice; however, using moderated sequential regression analyses, the overall findings indicated a lack of support for the JSH. Notably, negative relationships between justice and stress were demonstrated. Specifically, results demonstrated the strength of informational and interpersonal justices as indicators and potential antecedents to stress and suggest implications for interactional justice training for leaders.

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CHAPTER 1

INTRODUCTION

1.1 Study Overview

Issues of fairness and justice are key concepts to most individuals; even children seem to understand what is fair and not fair at an early age. In the business setting, fairness can be perceived in terms of (a) a reward to contribution ratio, (b) the extent that decision making procedures are just, or (c) how deferential a supervisor might be towards his or her employees. People want to be treated with respect, and they want their contributions to be equally matched with rewards. Not only do people want to be equally compensated for their inputs, but they prefer the procedures that delegate outcomes, and the individuals associated with the delegation of outcomes, to be fair as well. In other words, having procedures that are consistent, unbiased, and representative of worker concerns (Greenberg, 1986; Leventhal, 1980; Thibaut & Walker, 1975), as well as ensuring a respectful interpersonal interaction between employee and supervisor (Bies & Moag, 1986; Colquitt, Conlon, Wesson, Porter & Ng, 2001; Greenberg, 1993; Judge & Colquitt, 2004) are key elements to overall perceptions of fairness. Research has segmented fairness into four justice components: distributive, procedural, interpersonal, and informational justice. Briefly, distributive justice is defined by the perceived fairness of outcome allocation, whereas procedural justice reflects the fairness associated with having input in decisions that determine such outcomes. Interpersonal justice reflects the fairness associated with a supervisor's interaction with an employee, whereas informational justice reflects that amount of information that a supervisor shares with a respective employee (Cohen-Charash & Spector, 2001; Colquitt, 2001).

Two recent meta-analyses have helped to demonstrate the importance of justice with regard to the consequences of workplace practices (Cohen-Charash & Spector, 2001; Colquitt et al., 2001). These comprehensive research articles suggest that organizational justice is positively associated with beneficial organizational outcomes such as organizational commitment, satisfaction, and organizational citizenship behavior. The relationships are such that as justice increases, so does commitment, satisfaction and citizenship behavior. Oppositely, organizational injustice has been associated with negative organizational outcomes such as counterproductive behavior and withdrawal performance. For organizations, these negative outcomes can produce harmful consequences including costs associated with burnout, turnover, low productivity, and absenteeism (Cohen-Charash & Spector, 2001; Colquitt et al., 2001; Elovainio, Kivimaki, & Vahtera, 2002; Janssen, 2004; Tepper, 2001). Although the importance of understanding organizational justice has been matched by numerous studies within scientific literature (Cohen-Charash & Spector, 2001), few studies have attempted to assess the relationship between justice (or injustice) and the consequences specific to stress. Presently, there is only one study that has examined the justice-stress relationship as it relates to all four justice variables (i.e., distributive, procedural, interpersonal, and informational; Judge & Colquitt, 2004). Clearly, there is a present gap in the literature within a much needed area of study. This study attempted to expand upon the current literature by investigating this association between organizational justice and perceived stress. Specifically, this study is designed to answer the following general research question: How does organizational justice affect perceived stress?

This paper will first provide a historical background of organizational justice by performing a comprehensive literature review. A discussion of the current trends regarding the four justice dimensions, including distributive, procedural, informational and interpersonal, will follow. This discussion will include: (a) current debates in the literature as they pertain to the dimensions of justice and (b) an outline of the justice framework utilized in the study.

Additionally, recent literature on stress is reviewed and a discussion of research specifically as it pertains to the organizational justice and stress relationship is presented. Finally, the methodology, analysis, and implications of the study are revealed.

1.2 Organizational Justice

1.2.1 History of Justice

Within the last 40 years of organizational research, the concept of justice has become an increasingly visible construct. The literature has defined justice as a social construct. That is, an event is identified as "just" if most individuals perceive it as such (Cropanzano & Greenberg, 1997). For the purposes of this paper, it should be noted that justice and fairness will be used interchangeably. Over the years, fairness has been derived from past research on decision making and fairness perceptions. Colquitt (2001) describes justice in two terms: (a) the fairness of outcomes and (b) the fairness of the procedures that allocate the outcomes. These forms of justice are typically labeled distributive justice (Adams, 1965; Leventhal, 1976) and procedural justice, respectively (Leventhal, 1980; Leventhal, G. S., Karuza, J., & Fry, W. R., 1980). These two forms of justice fall under a larger rubric that seeks to explain the impact of justice on organizational functioning (Greenberg, 1987, 1990). In its infancy, organizational justice incorporated a two-factor model endorsed by Folger and Konovsky (1989), Greenberg (1990), Lind and Tyler (1988), McFarlin and Sweeney (1992), and Sweeney and McFarlin (1993). The two-factor model consists of distributive justice (e.g., person-referenced outcomes such as reward satisfaction) and procedural justice (e.g., organization-referenced outcomes such as commitment).

The two-factor model was first questioned with the inception of a third justice variable, interactional justice. Bies and Moag (1986) introduced and defined interactional justice as the interpersonal treatment people receive in organizations when distributions and procedures occur. The way people are treated (i.e., with respect and sensitivity) is taken into account when perceiving interactional justice. Many researchers argued that interactional justice was simply

an extension of procedural justice because the two constructs are highly correlated (Moorman, 1991; Niehoff & Moorman, 1993; Tyler & Bies, 1990); however, other researchers have firmly adopted a three-factor model of justice (Aquino, 1995; Bies & Shapiro, 1987; Skarlicki & Folger, 1997). The importance of this third factor was exemplified when researchers found it essential in explaining outcomes related to supervisors, such as commitment to supervisor and citizenship behaviors (Malatesta & Byrne, 1997; Masterson, Lewis, Goldman, & Taylor, 2000).

Even more recently, a four-factor model of justice has been suggested by Greenberg (1993). Specifically, Greenberg proposed that interactional justice can be separated into two components: (a) interactional factors related to distributive justice (later referred to as interpersonal justice), and (b) interactional factors related to procedural justice (later referred to as informational justice). In relation to distributive justice, the interpersonal dimension reflects the respect and sensitivity aspects of interactional justice because it alters the effects of the distributive outcome. For example, a supervisor can increase or decrease the negative affect an employee might experience due to an unjust reward by treating the person with respect. On the other hand, in relation to procedural justice, the informational factor reflects the information exchanged that is helpful in evaluating outcomes. This type of justice is exemplified when a supervisor takes the time to explain a procedure or the reasons a decision was made to his or her employees. This four-factor model, however, went untested for almost a decade.

Debates over the dimensionality of justice were further complicated due to the inconsistent and poor measurement of the justice factors (Colquitt, 2001; Lind & Tyler, 1988). Fueling these debates was a lack of standardized measurement and confusion over the dimensionality of the construct. For instance, in some studies distributive justice was assessed by asking about treatment received (Joy & Witt, 1992); whereas, other studies assessed distributive justice by respondents' abilities to express their own ideas in the workplace, a concept more aligned with procedural justice (Fryxell & Gordon, 1989). The most confusion occurred as researchers attempted to operationally define interactional justice. Examples of this

are found in Moorman's measure (1991) which unintentionally combined Bies and Moag's (1986) interactional justice model with aspects of procedural justice. Moorman's measure combined items that measured interpersonal interaction (i.e., interactional justice) with items that also assessed perceived voice and bias suppression of the supervisor (i.e., procedural justice). Needless to say, the cross-pollination of items inflated the relationships between the different factors of justice and led to inconclusive and deficient findings (Colquitt, 2001).

Two relatively recent events helped to provide construct validity to the four-factor model of organizational justice. First, Colquitt (2001) investigated the dimensionality of organizational justice by using both a student sample and a manufacturing employee sample in order to factor analyze the four-factor structure. The four factors (i.e., distributive, procedural, interpersonal, and informational) fit the data in both samples better than the two- or three-factor models. Structural equation modeling was utilized to demonstrate predictive validity with regard to leader evaluations, rule compliance, commitment, and helping behavior. Conclusions from this study suggest that future research should include all four variables when analyzing organizational justice.

Secondly, the results of a meta-analysis conducted by Colquitt et al. (2001) suggested that although the four dimensions are moderately related to one another, they contribute incremental validity in describing fairness perceptions in employment. Using 183 justice studies, the authors found support for the four-factor model. The study also analyzed the relationships between the four justice dimensions and outcome variables such as satisfaction, commitment, withdrawal, citizenship behaviors, and performance. For example, procedural justice had the strongest relationship with job satisfaction and performance, whereas distributive justice was most strongly associated with outcome satisfaction and withdrawal behaviors. Informational justice was the strongest unique predictor of the evaluation of authority with reference to general management, and interpersonal justice was moderately associated with many of the outcomes (e.g., individual citizenship behavior, withdrawal, and evaluation of authority).

Additional support for the four-factor model can be found in Colquitt and Shaw (2005). The researchers acknowledge the fact that distributive and procedural justices are highly correlated, as are the informational and interpersonal justice factors. In fact, meta-analytic estimates of uncorrected correlations range from 0.40 to 0.60 and single studies have shown correlations as high as 0.70 (Sweeny & McFarlin, 1997). However, Colquitt and Shaw compared justice to relevant multi-dimensional scales such as organizational commitment in attempts to argue that factors can be highly associated without showing unity. For example, despite the issue that the factors of commitment are highly correlated, the magnitudes of the three constructs are usually interpreted quite differently. These researchers suggest that correlations in the 0.50 range are typically not worthy of aggregating, whereas correlations in the 0.70 range should be aggregated. These suggestions were utilized as guiding support for the four-factor analyses in this study.

While the debate continues, much of the recent literature has continued to endorse the four-factor model of organizational justice (Brent & Colquitt, 2007; Camerman, Cropanzano, & Vandenberghe, 2007; Greenberg, 2004; Judge & Colquitt, 2004). Further, when investigating the relationships of justice with outcomes such as commitment, satisfaction, or even stress, researchers often assess how these factors interact with each other to predict various outcomes (Brockner & Wiesenfeld, 1996; Elovainio et al., 2005; Greenberg, 2004; Janssen, 2004; Riolli & Savicki, 2006; Tepper, 2001). However, before addressing the overarching research questions in the present paper, it is important to review the organizational justice literature with regard to each factor individually.

1.2.2 Distributive Justice

As mentioned before, distributive justice refers to the fairness in the distribution of outcomes such as salary, rewards, benefits, and pay raises. Much of the research surrounding distributive justice has been derived from the initial work on equity theory conducted by Adams (1965). Using the social exchange framework, Adams suggested that people in organizations

were mostly concerned with the fairness of outcomes in relation to inputs of the individual employees. That is, if an individual perceived his/her ratio of inputs to outcomes as different from another's ratio, the individual would experience distributive injustice. Later, this type of fairness was expanded to include allocation rules such as equality and need (Leventhal, 1976). These rules of distributive justice measured the extent to which an allocation of an outcome is consistent with the goals that are relevant to a particular situation (Deutsch, 1975). For example, if an organization's goals are to instill a concept aligned with equality (e.g., group harmony), the allocation rules should be different than if the organization's goals were focused more on need (e.g., increased productivity; Colquitt et al., 2001).

Due to the nature of distributive justice being focused on outcomes, researchers have expressed the injustice aspect of this type of justice as a predictor of affective, cognitive and behavioral outcomes (Cohen-Charash & Spector, 2001). In other words, distributive injustice should lead to outcomes affecting: (a) a person's emotions, such as anger, unhappiness, frustration, and guilt (Weiss, Suckow, & Cropanzano, 1999); (b) a person's cognitions, such as distortion of inputs to outputs (Adams, 1965); or (c) a person's behavior, such as performance or withdrawal (Cohen-Charash & Spector, 2001). As organizational justice expanded in theory and in research, a new type of justice emerged: procedural justice.

1.2.3 Procedural Justice

Procedural justice refers to the fairness of the organization's policies and procedures that are used to designate outcomes. In their seminal research, Thibaut and Walker (1975) introduced to the organizational literature the concept of process in decision making within a legal perspective. The authors viewed third-party legal resolution in two stages: (a) decision and (b) process, suggesting that people were willing to relinquish control of the decision stage as long as they retained control in the process stage. Thus, procedural justice could be even more important than distributive justice because people are more willing to accept unjust outcomes if the procedure that determined the allocation of the outcomes was fair (Lind & Tyler, 1988).

Known as the “process control effect” this finding is one of the most replicated in organizational literature (Colquitt et al., 2001).

While Thibaut and Walker’s (1975) theory centered on legal disputes, Leventhal played an integral role in extending the ideas of procedural justice into an organizational model (Leventhal, 1980; Leventhal et al. 1980). Within this expansion, procedural justice evolved into more than just process control. In fact, this theory of procedural justice was broken down into six decision-making criteria: (a) be applied consistently, (b) be free from bias, (c) ensure that all information is collected, (d) correct inaccurate decisions, (e) work towards ethical standards, and (f) allow for those affected by a decision to have prior input. Eventually, Thibaut and Walker’s theories were integrated with Leventhal’s six criteria to virtually equate process control with procedural justice (Folger & Cropanzano, 1998).

Compared to the injustice aspect of distributive justice, the injustice aspect of procedural justice is predicted to be related to cognitive, affective, and behavioral reactions that are directed more towards the organization rather than to his/her tasks or specific outcomes (Cohen-Charash & Spector, 2001). While an employee would still become upset, mad, or frustrated at a procedural injustice, the affects are more commonly observed in reactions toward the organization as a whole. For example, procedural justice/injustice has been empirically related to organizational commitment (Martin & Bennett, 1996; Mossholder, Bennett, Kemery, & Wesolowski, 1998).

The combination of procedural justice and distributive justice formed the first model of organizational justice known as the two-dimensional model. This model was the standard model for subsequent justice studies until the addition of interactional justice (Bies & Moag, 1986; Colquitt et al., 2001).

1.2.4 Interactional Justice

With a focus on the importance of interpersonal treatment, Bies and Moag (1986) argued that the two-dimensional model did not encompass all of the perceived fairness in an

organization. The model neglected to assess important interpersonal interactions between individuals and their supervisors within an organization. Interactional justice refers to the interpersonal treatment that employees perceive from their supervisors while implementing the procedures associated with procedural justice. Further, this additional dimension of justice is distinct from procedural justice in that it affects personal-level outcomes (e.g., attitude towards work), whereas procedural justice affects organization-level outcomes (e.g., commitment and satisfaction; Cohen-Charash & Spector, 2001).

As previously mentioned, Greenberg (1993) suggested that interactional justice be separated into two distinct components: (a) interpersonal justice and (b) informational justice. Interpersonal justice refers to the social aspect of distributive justice and aligns itself with the respect, politeness, dignity and propriety rules as suggested by Bies and Moag (1986). Informational justice refers to the social aspect of procedural justice, thus focusing more on the information people receive regarding why certain procedures were conducted (Colquitt et al. 2001).

Interactional justice has received the most attention recently in trying to operationally define and separate it from the other dimensions of justice. Two recent meta-analyses helped to further the literature on this topic. Cohen-Charash and Spector's (2001) review revealed support for interactional justice as a separate construct from procedural justice. As mentioned above, Colquitt et al.'s (2001) findings suggest the merit of separating interactional justice into two factors including interpersonal and informational justice.

Together these four dimensions of organizational justice including distributive, procedural, interpersonal and informational, provide a comprehensive measurement of fairness within the workplace. The four-factor model allows measurement for perceived fairness of outcomes, procedures related to the outcomes, treatment by the supervisor, and explanations from the supervisor for a variety of organizational situations. This study will employ the four-factor model as proposed by Colquitt (2001) to analyze organizational justice.

However, it should be noted that this four-dimensional model of justice is still relatively new to the literature. Despite its recent support, other researchers continue to utilize the three-factor structure that combines interpersonal and informational justice into one factor (e.g., Greenberg, 2004). Accordingly, one contribution of this paper will help to answer the question: Can organizational justice be conceptualized into four distinct justice variables?

H1: Organizational justice can be measured using four independent justice variables.

1.3 Stress

A topic that is scarcely studied in relation to organizational justice is work-related stress, or even globally perceived stress. Absent from recent organizational justice meta-analyses, the effects of justice on stress, or strain, as it is more commonly identified, has been studied by only a handful of researchers (Elovainio, Kivimaki, & Helkama, 2001; Judge & Colquitt, 2004; Tepper, 2001). This shortage of literature is unfortunate because the implications of research involving the antecedents of stress are far-reaching with regard to organizational practices.

In a paper about stress on the job, some sobering statistics about stress were conveyed (DeFrank & Ivancevich, 1998). For example, 70% of employees reported that their previous work year was the most stressful. Additionally, recent statistics reveal that 40% of workers report that their job is very or extremely stressful and 80% of workers report they feel some type of stress on the job (National Institute for Occupational Safety and Health [NIOSH], 2007; American Institute of Stress, 2007). These organizations report that job stress is more associated with health complaints than financial or family problems and 40% of turnover has been reported as being the result of work-related stress (NIOSH, 2007). Interestingly, three-fourths of employees believe they have more on-the-job stress than members of previous generations. Regardless of whether these employees' beliefs are true, stress has become a major issue for organizations across the globe.

Although stress is not easily defined, for the most part it is a generally aversive or unpleasant emotional and/or physiological response resulting from adverse experiences (Beehr

& Bhagat, 1985; Hart & Cooper, 2001). Stress models are mostly defined in terms of (a) stressors, (b) stress, and (c) strains. Stressors are perceived environmental characteristics. In terms of work stress, stressors can be work experiences and/or stimuli (e.g., workload, role ambiguity). Stress is the unpleasant state experienced when the stressors exceed the adaptive resources of the individual. Strain is the experienced behavioral, physiological, or psychological response in reaction to the perceived stress (Hart & Cooper, 2001; Kahan & Byosiere, 1992). Further, strain usually refers to a type of chronic stress; as such, strain can be described as a type of stress. While the current study measured *stress* as defined by general adverse emotional feelings or physiological responses, it should be noted that the review of the literature incorporates a variety of related constructs.

Job stress can arise from a variety of sources including job tasks, workload, work conditions, and organizational relations (Vermunt & Steensma, 2005). Moreover, employees may experience stress in relation to working conditions such as pay, rewards, work hours, and leadership (Allegro, Kruidenier, & Steensma, 1991). In past research, work-related stressors have been studied in terms of an employee's role, job demands, and the characteristics of the physical work environment (Hart & Cooper, 2001; Kahan & Byosiere, 1992).

However, other more interpersonal stressors have been studied as well. For example, Spector and Jex (1998) investigated stressors with relation to interpersonal conflict (e.g., being rude) and organizational constraints (e.g., poor leadership or insufficient information). Other research has investigated stress models that include stressors such as the relationship with supervisors' lack of social support (Marshall & Cooper, 1979), or supervisory misbehavior (Kohli, 1985). It is evident that these types of stressors tend to coincide with the interpersonal and informational facets of organizational justice because they both allude to a supervisor's interactional behavior.

Some studies have measured stressors that are seemingly like facets within procedural justice. For example, Marshall and Cooper's (1979) model included stressors such as lack of

participation and a supervisor's inability to delegate tasks. While a lack of participation reflects an injustice related to voice, and inability to delegate tasks points to an unfair process, both are constructs aligned with procedural justice. Additionally, a study by Chesney et al. (1981) focused on the lack of autonomy as a work-related stressor. These studies provide important evidence that stressors can be very similar to the influence and participation aspects of procedural justice that both Leventhal (1980) and Thibaut and Walker (1975) suggested. Clearly, there is some overlap between the stressors included in past research and the conceptual theories of organizational justice.

1.4 Justice and Stress

As previously mentioned, the number of studies that focus on how justice might affect stress are sparse, and surprisingly so because injustice and stress have been discussed simultaneously since the 1960s. For example, the first studies on fairness began to investigate negative responses to inequitable rewards (Adams, 1965). The psychological distress under investigation was designated as an emotional reaction to a perceived unfair decision. The psychological distress was also measured in terms of behavioral reactions to the stress such as a reduction in task effort (Adams, 1965). If a participant in these studies received an unfair payment, the participant might lower his or her effort to restore the justice.

Researchers argue that one of the most salient characteristics of stress involves an individual's capabilities, which are much like trait-type entities (Vermunt & Steensma, 2005). The stable quality of individual capabilities creates a new twist on a perceived unfair situation because a person can not readily adapt his or her own capacity. Therefore, the discrepancy between something such as intelligence and the demands from the work environment make the unfairness strong enough to become a stressor (Folger & Cropanzano, 1998).

With specific regard to the association between distributive justice and health, a variety of studies measured constructs very similar to perceived stress. One study demonstrated increased insomnia in a nurse sample that experienced a change in their pay policy compared

to a group of nurses that did not receive a pay change (Greenberg, 2006). In this study, Greenberg argued that insomnia was a reaction to the perceived stress the nurses were feeling due to the change in outcome. Other studies have documented a negative association between distributive justice and both job-related anxiety as well as long-term psychological stress (Janssen, 2004; Tepper, 2001). These studies measured distributive justice with regard to organizational rewards and found support for a negative justice-stress relationship.

The association between procedural justice and health has been studied by Elovainio, et al. (2002) who demonstrated the effects of procedural and interactional injustice on reported absenteeism as a response to stress. Findings indicate that employees who reported receiving low justice had up to 1.9 times more absences due to sickness than those who reported high justice. Similar findings were demonstrated in a Finnish sample which showed procedural and interactional justice as significant correlates of stress as measured by depression, nervousness, and experienced difficulty with concentrating (Eloviano et al., 2001).

The first study to link all four organizational justice dimensions to perceived stress was conducted by Judge and Colquitt (2004). In their study, the researchers examined the relationship between the four-factor model of organizational justice and stress with work-family conflict serving as a mediator in the relationship. This study utilized 164 faculty members at 23 different universities throughout the U.S. Using survey methodology, this study employed Colquitt's (2001) measure of all four justice variables along with measures of stress and work-family conflict. Although all four justice variables were hypothesized to predict stress, only the procedural and interpersonal justice variables were found to be significant predictors. The authors argued that these two significant predictors provide empirical support for the association between injustice and perceived stress. The presence of justice seemed to lessen the overall stress that employees perceived. With respect to the two non-significant justice predictors, Judge and Colquitt argued that some justice dimensions might have weaker effects if they are less interpretable. For instance, distributive justice is sometimes difficult to interpret because it

requires an employee to have some knowledge of other's outcomes. Informational justice is similar in difficulty to interpret because it is hard for an employee to be able to judge if the information he or she received was the complete truth. Further research will help to increase clarity regarding the magnitude of the stress effects for each justice dimension.

Guided by these results, and the theoretical basis for the justice-stress relationship, this study will seek to answer the question: Will the four perceived organizational justice variables affect perceived stress?

H2: There will be a significant negative relationship between the four perceived justice variables (distributive, procedural, interpersonal, and informational) and stress, such that each justice variable will demonstrate unique effects in predicting stress.

1.5 Cognitive Appraisal Model

Perhaps the greatest theoretical link between justice and stress can be traced back to Lazarus and Folkman's (1984) model that viewed stress as a product of an appraisal process. According to the model, individuals make two appraisals of the interaction between themselves and their environment before stress is induced (Lazarus, 2007). In the first appraisal, an assessment of a potential threat or harm of an event is conducted; in the second appraisal, an assessment of potential coping options is conducted. People then respond to events only after they have mentally assessed the potential impact that these events might have on them (Greenberg, 2004). Various researchers have integrated Lazarus and Folkman's Cognitive Appraisal Model into their research on justice and stress, strain, or other forms of distress (Elovainio et al., 2001; Greenberg, 2004; Tepper, 2000; 2001; Vermunt & Steensma, 2001). In attempts to explain the interactive effects of distributive and procedural justice through the Cognitive Appraisal Process, these studies have contributed to three similar models.

In the first model, Tepper (2001) integrated stress and coping theory with justice theory. The first (primary) appraisal incorporates an assessment of the implications that an event might

have on a person's well-being. At this stage in the process, an individual is simply assessing whether an unjust event is a threat, a harm, a loss, or a challenge. Events that could have potential implications on a person's well-being trigger the secondary appraisal process, where coping resources are evaluated. The secondary appraisal process involves the individual assessing the extent to which he or she can avoid, deflect, or at least minimize the harm (Greenberg, 2004). If an individual determines that he or she can avoid the harmful nature of the unjust event by using resources or capabilities, the event is designated as benign (Tepper, 2001). To the extent that the individual feels powerless and assesses the harm as unavoidable, the event becomes a stressor (Greenberg, 2004). This feeling of powerlessness can be a response to either one specific event or a build up of events over time (Tepper, 2001). For example, an appraisal of a threat can be made for a single event (such as a single unpleasant encounter with a supervisor) or the appraisal can be made as a result of incremental events over time (such as several unpleasant encounters with a supervisor); both events can lead to secondary appraisals of stress. In turn, stressful appraisals produce adverse emotional reactions and lead to physical and psychological signs of strain.

A second model, proposed by Vermunt and Steensma (2001), also applied the Lazarus and Folkman (1984) model of psychological stress. In this model, only after additional information designates a situation as being a threat, are distributive or procedural justice perceived as being a threat. As an example, a heavy workload may or may not be perceived as a threat depending on additional information regarding the allocation of resources (Vermunt & Steensma, 2001). If there is a lack of information designating a situation as a threat, such as a sufficient allocation of resources, the situation is simply perceived as being a challenge. However, if the situation is perceived as a threat, the secondary appraisal process will be initiated. In the secondary appraisal process, viable resources and options are evaluated in order to cope with the perceived threat (Vermunt & Steensma, 2001). The authors note that in this model, many times, procedural and distributive injustices are perceived at the same time. In

this case, the combination of both forms of injustice contributes to the primary appraisal (Vermunt & Steensma, 2005).

In his theoretical article, Greenberg (2004) describes the Justice Salience Hierarchy (JSH), the third model depicting the cognitive appraisal process. JSH suggests that the mere association between justice variables and stress is too simplistic because it ignores the interactive effects associated with the primary and secondary appraisal process. Instead, organizational justice dimensions serve as events for which the primary and secondary appraisals of harm, threat, loss, or challenge occur. For example, the JSH model assumes that the distributive outcome is first perceived as either harmful or not harmful through the primary appraisal associated with procedural justice. In other words, people perceive the fairness of what they receive (i.e., distributive justice) through an analysis of how they receive it (i.e., procedural justice). This is exemplified by the fact that people seem to accept outcomes that are unfair as long as they believe them to be the result of a fair process. Thus, Greenberg suggests that there is an interactive relationship between distributive and procedural justice.

The interactive relationship of distributive and procedural justice is demonstrated when negative outcomes following fair procedures lead to less stress than do negative outcomes following unfair procedures. This primary appraisal effect was demonstrated by Tepper in two separate studies conducted in 2000 and 2001. Of over 4,000 employees, those that reported the lowest levels of distributive and procedural justice also reported experiencing the most emotional exhaustion, anxiety, and depression. Similarly, the results of a study of first-level managers demonstrated that innovative behavior was most stressful to people that reported low levels of both justice variables on their jobs (Janssen, 2004).

The secondary appraisal process of Greenberg's (2004) JSH model is facilitated by interactional justice (i.e., informational and interpersonal justices). Greenberg argues that this third form of justice, which involves the interpersonal treatment of an individual, will either derail or enhance perceived stress. For example, an individual might experience an unfair outcome

and assess the procedure as also being unfair. An ensuing interaction with a supervisor will either cause stress if the supervisor is unfair, or relieve some of the stress if the supervisor is just. Simplistically, the JSH suggests that the extent to which an outcome elicits stress is determined by the individual's assessment of it resulting from (a) unfair and harmful procedures and (b) the uncaring or disinterested treatment from a supervisor that suggests no remedy for the outcome.

Although the secondary appraisal part of the JSH has not been entirely tested, Greenberg (2004) argues that the Judge and Colquitt study conducted in 2004 lends support. As previously described, this study demonstrated that lower levels of procedural and interpersonal justice were associated with the most stress. Further, this effect was more pronounced in individuals that perceived more work-family conflict. This finding suggests that those without social support, either from work or from home, suffer the most from stress (Greenberg, 2004). In another study, similar findings were found among nurses and sleeping patterns (Greenberg, 2006). The procedural change affecting the nurse's pay scale was associated with less sleep; however, this relationship was mitigated by interpersonal justice. The difference among the nurses was due to a controlled experimental condition in which half of the supervisors were trained in how to be a better interactional supervisor and half were not trained. As expected, participants with the untrained supervisors experienced more sleep deprivation than those with trained supervisors. This finding is not only exciting because it demonstrates theoretical support for the JSH, but also suggests that individual supervisors can actually help to lessen the stress their workers might perceive.

The JSH model suggests that the relationships between the justice variables are more complicated than simple linear associations. However, the novelty associated with JSH leaves room for exploratory analysis in order to better understand the primary and secondary processes of the model. In order to test the primary association step of the hierarchy, this paper

will seek to answer: Will the relationship between perceived stress and procedural justice be altered based on distributive justice?

H3: The negative relationship between procedural justice and stress will be moderated by distributive justice, such that the relationship will be stronger when distributive justice is low.

Further, the current study did not locate any research which empirically tested the direct relationships of the secondary process of the JSH. Therefore, this paper will investigate the secondary appraisal process in a variety of ways. First, this study will seek to answer the question: Will the relationships between procedural justice and perceived stress, and distributive justice and perceived stress be altered based on interpersonal / informational justice?

H4a: The negative relationship between distributive justice and stress will be moderated by interpersonal justice, such that the relationship will be stronger when interpersonal justice is low.

H4b: The negative relationship between distributive justice and stress will be moderated by informational justice, such that the relationship will be stronger when informational justice is low.

H4c: The negative relationship between procedural justice and stress will be moderated by interpersonal justice, such that the relationship will be stronger when interpersonal justice is low.

H4d: The negative relationship between procedural justice and stress will be moderated by informational justice, such that the relationship will be stronger when informational justice is low.

Lastly, as a test of the JSH model, this paper will seek to answer: Will the relationship between perceived stress and the interaction of procedural justice and distributive justice be altered based on interpersonal and/or informational justice?

H5a: The relationship between the interaction of procedural and distributive justice with stress will be moderated by interpersonal justice, such that the relationship will be the strongest when interpersonal justice is low.

H5b: The relationship between the interaction of procedural and distributive justice with stress will be moderated by informational justice, such that the relationship will be the strongest when informational justice is low.

CHAPTER 2

METHOD

2.1 Participants

A total of 308 participants were recruited through undergraduate psychology and management classes at The University of Texas at Arlington. All participants of the current study indicated current employment both from a pre-survey instrument given at the beginning of the semester, and at the time they completed the survey on-line. The average length of time between the two surveys was 39 days. The participants received class credit for their participation and were not offered any other type of payment. Students were given alternative options for class credit, so participation was considered voluntary. Participants were deleted from the data set if they reported working less than 6 months for their current employer (*N*= 38) and if they reported working less than 5 hours a week (*N*= 8). This decision was made in order to maximize the number of participants while also ensuring that the data would reflect those participants who have worked in their organization long enough to make observations about the study variables. Of the original 308 participants, 262 remained after these deletions. A priori power analysis indicated that a sample of 218 participants would be needed for the proposed analyses, thus the sample size for the current study is adequate for testing all the proposed hypotheses.

Of the remaining participants, 176 were female (67.2%) and 85 were male (32.4%); 29 reported that they were Asian (11.1%), 34 reported that they were African American/Black (13.0%), 145 reported that they were Caucasian/White (55.3%), 40 reported that they were Hispanic/Latino (15.3%) and 14 reported that they were multiracial/other (5.3%). Given the sample, 77% of the participants were between the ages of 18 through 27; however, the age

range was from 18 to 50 with the mean age of 25 and median age of 22. Other work-related descriptive statistics, including length of employment, intent to stay, and motivation to work, can be found in Table 2.1.

Table 2.1 Frequency distribution of job-related demographic questions

Demographic Question	Frequency	Percent of Total Sample
Hours Worked per Week		
5 – 15	25	10%
16 – 25	67	26%
26 – 35	58	22%
36 – 46	88	34%
46 or more	24	9%
Months Employed with Current Company		
6 – 12	71	27%
12 – 18	25	9.5%
18 – 24	39	14.9%
25 or more	127	49%
Permanency		
Full Time/Temporary	92	35%
Full Time/Permanent	47	18%
Part Time/Permanent	47	18%
Part Time/Temporary	76	29%
Annual Compensation		
15,000 or less	94	36%
15,001 - 25,000	30	12%
25,001 - 35,000	37	14%
35,001 - 45,000	29	11%
45,001 - 55,000	12	5%
55,001 - 65,000	7	3%
65,001 - 75,000	6	2%
75,001 or more	9	3%
not reported	38	15%

Table 2.1- *Continued*

Demographic Question	Frequency	Percent of Total Sample
Motivation to work		
Only to Pay Bills	109	42%
Pay Bills and Investment in a Career	93	36%
Only to Invest in a Career	32	12%
Intent to Stay		
less than 6 months	45	17%
more than 6 months/less than 1 year	55	21%
more than 1 year/less than 2 years	69	26%
more than 2 years/less than 3 years	33	13%
more than 3 years/less than 4 years	22	8%
more than 4 years/less than 5 years	7	3%
more than 5 years/less than 10 years	9	3%
more than 10 years	22	8%
Cohesion with Future Plans		
Permanent Employment/Same Company	44	17%
Permanent Employment/Different Company	114	44%
Permanent Employment/Different Company/Different Field	7	3%
Already Permanent Employment	50	19%
Temporary Employment/Different Company	27	10%
Temporary Employment/Different Company/Different Field	20	8%

The sample was comprised of 174 psychology students and 88 management students. Because the two samples included mostly undergraduate non-majors, combining the groups for analysis was deemed suitable. However, to ensure similarity, separate analyses were conducted on the groups to confirm their similarity. Independent *t*-tests were conducted on all the main study variables and the analyses revealed no differences between the two groups.

2.2 Measures

The survey utilized in this study assessed organizational justice, perceived work-related stress, perceived physiological and psychological stress, and socio-demographic characteristics. All measures were completed by each participant in one setting through an on-line survey system.

2.2.1 Organizational Justice

Organizational justice was measured using Colquitt's four-dimensional measure, created and validated in 2001. Items referenced compensation level outcomes and procedures. Distributive justice was measured using four items (e.g., "Does your compensation level reflect what you have contributed to the organization?"). Procedural justice was measured with seven items, and referenced the procedures used to arrive at the employee's compensation level (e.g., "Have you had influence over the compensation level arrived at by those procedures?"). Interpersonal justice was measured with four items, and referenced the employee's main supervisor (e.g., "Has he or she treated you in a polite manner?"). Lastly, informational justice was measured with five items, also referencing the employee's main supervisor (e.g., "Has he or she explained the procedures thoroughly?"). All justice items were rated using a Likert-type scale, (1 = strongly disagree; 5 = strongly agree). All items were averaged to form overall scales for each of the justice dimensions. The reliabilities of the scales were as follows: distributive α= .92, procedural α= .82, interpersonal α= .89, and informational α= .85. For a complete list of items see Appendix A.

2.2.2 Stress

Stress was measured using two different scales because stress can be experienced in a variety of ways, including stress specific to the job and generalized psychological and physiological stress (Margolis, Kroes, & Quinn, 1974). Both specific stress and general distress were measured to detect effects of organizational justice. The Job Stress Scale (Parker & Decotis, 1983) measured specific stress with regard to feelings of job-related anxiety. Following

Jannsen (2004), the five-item scale (see Appendix B) assessed the frequency of the items in relation to the participant's employment, such as "I have felt fidgety or nervous as a result of my job." Respondents indicated the frequency with which they experienced anxiety using a 5-point Likert-type scale (1 = never; 5 = always/daily). Scores were averaged in order to create an overall stress score. The Cronbach's alpha for this scale was α = .72 (Parker & Decotis, 1983).

The Brief Symptom Inventory (BSI) was used to assess general distress (Derogatis & Melisaratos, 1983). This scale measured stress due to psychological or physiological responses. Following Riolli and Savicki (2006) and Tepper (2001), the current study specifically included the Somatization (SOM), Depression (DEP), and Anxiety (ANX) constructs of the BSI. The SOM dimension contains seven items that measures the psychological distress arising from perceptions of bodily dysfunction. The seven items of the DEP dimension measures a more broad range of symptoms related to dysphoria and lack of motivation and energy. Lastly, the ANX dimension, which consists of six items, measures nervousness, panic attacks, apprehension, and dread. Respondents reported the extent to which the symptoms described in each of the items have been bothering them during the past seven days using a 5-point Likert-type scale (1 = not at all; 5 = extremely bothersome). The three scales were averaged for a total stress score. For a complete listing of the BSI items used in study, see Appendix C. Cronbach's coefficient alphas were SOM α = .89, DEP α = .87, ANX α = .87 and overall BSI α = .94.. (Derogatis & Melisaratos, 1983).

2.2.3 Demographic Questionnaire

A review of the literature has shown various demographic variables as potentially moderating the justice-stress relationship. For example, the literature alludes to mixed results of gender moderating justice perceptions and stress (e.g., Bauer, 1999; Heilman, McCullough & Gilbert, 1996; Heilman, Simon, & Repper, 1987; Leung & Lind, 1986). Other studies control for age, as older workers are usually more tenured in organizations which might influence perceived justice or perceived stress (e.g., Janssen, 2004). In order to determine if any

association exists between these variables and the justice-stress relationship, a third component of the survey addressed potential covariates and moderators. This questionnaire investigated certain socio-demographic variables and job characteristics such as gender, age, tenure, and the cohesiveness of current employment with future plans (i.e., the extent that the participant's current job was in line with the participant's ideas of future employment).

Further, because the current study utilized undergraduate participants with a variety of jobs, it was important to assess the nature of their jobs. For example, a participant with full-time, permanent employment might perceive organizational justice and stress differently than a participant with part-time temporary employment. To address these issues, items on the questionnaire included salary, type of position, type of job, permanency of the job, and other relevant work-related variables (see Appendix D).

2.3 Procedure

The survey was administered on-line using the University of Texas at Arlington SONA system. A question of employment status was included on a pre-survey that was also conducted on-line through the University SONA system. Only participants who designated current employment with an organization were invited to complete the on-line survey specific to this study. Following an on-line consent, the participants completed a 62-item on-line survey that took approximately 15-20 minutes to complete. The participants were also debriefed using the on-line system.

2.3.1 Data Analyses

2.3.1.1 Confirmatory Factor Analysis

Following Colquitt (2001), the first hypothesis, that organizational justice can be measured using four independent justice variables, was assessed using maximum likelihood confirmatory factor analysis with AMOS. The maximum likelihood method was most appropriate for this study's factor analytic purposes because it yields both a set of parameter estimates, as well as their standard errors, which were used to test the null hypothesis that each estimate is

equal to zero (Williams, Ford, & Nguyen, 2002). Further, a predicted covariance matrix was deduced from the parameter estimates, which facilitated in the estimation of variable relationships within specific models. Four different factor structures were compared: (a) a one-factor model, in which all the items would be indicative of one larger organizational factor; (b) a two-factor model, with distributive justice as one factor and procedural justice subsuming all other items; (c) a three-factor model, with distributive, procedural, and interactional justice (subsuming both interpersonal and informational); and (d) a four-factor model using the structure as designated by Colquitt (2001; Appendix A).

Fit statistics for these models included chi-square as an index of absolute model fit that assesses the degree to which the covariances implied by the model's structure matched the observed covariances. Chi-square was interpreted by its departure from zero (further from zero designating a worse fit), as well as in relation to the degrees of freedom with a ratio of 2 usually indicating arbitrary good fit (Arbuckle, 1997). Other fit statistics were assessed including the incremental fit index (IFI) and the comparative fit index (CFI) because these two indices compare a given model's fit to a baseline model, usually one devoid of covariances among the variables (Bentler, 1990). These fit statistics indicated a better fit as they approached one, with an arbitrary indicator of good fit at a value of .90.

Lastly, the root-means-square error of approximation (RMSEA) was also included in the confirmatory factor analysis. This is a measure of fit between an unknown but optimally chosen parameter of values and the population covariance matrix (Browne & Cudeck, 1993). This discrepancy is then measured relative to the degrees of freedom, and a RMSEA closer to zero indicates a better fit. Brown and Cudeck (1993) argue that a fit above .10 indicates a poor fit, between .80 and .10 indicates a mediocre fit, between .05 and .08 indicates a reasonable fit, and values less than .05 indicate a good fit. The 90% RMSEA confidence interval was reported. More recent suggestions of estimates of fit indicate upper bounds of .80 for the RMSEA are

adequate if accompanied by values of .90 or higher on the CFI and IFI (Lance & Vandenberg, 2001).

It should be noted that others, such as Hu and Bentler (1999) argue for more stringent cutoff values such as .06 or lower for RMSEA and .95 and above for the CFI and IFI. However, recent articles have reported that these suggested cutoff values are controversial (Lance, Butts, & Michels, 2006; Marsh, Hau, & Wen, 2004). Therefore, as suggested, this study did not regard these cutoff scores as absolutes but evaluated the fit of the models with consideration of all the guidelines offered.

2.3.1.2 Sequential Regression Models

Prior to performing inferential statistics related to the remaining hypotheses (two through five), the distributions and univariate descriptive statistics were examined to determine normality for the appropriate variables. Analyses were performed using SPSS EXPLORE for evaluation of assumptions. Specific attention was placed on the potential relationship between the socio-demographic variables and the justice and stress variables due to the nature of the sample. Because the sample is comprised of employees in numerous organizations with varying job characteristics, controlling for extraneous variables allowed for more precise measurements of the justice-stress relationship. Correlational analyses were conducted between the stress variables, the justice variables and all the continuous socio-demographic variables. The socio-demographic variables that demonstrated significant relationships with the dependent variable job stress were months employed (question 9 on Appendix D), which was positively related with job stress and hours worked per week (question 10 on Appendix D), which was negatively related with job stress.

Table 2.2 Correlations among stress and justice variables with socio-demographic variables

	Job Stress	Job Stress (log)	BSI	BSI (log)	Distributive Justice	Procedural Justice	Interpersonal Justice	Informational Justice
Age	-.09	-.09	-.16*	-.16*	-.10	-.17**	-.09	-.11
Length of employment	-.07	-.07	-.26**	-.26**	.00	-.09	.04	-.01
Hours Worked (Likert)	.14*	.14*	-.07	-.06	-.11	-.10	-.10	-.05
Months Employed	.13*	-.12**	-.18**	-.18**	-.05	.20*	.04	-.06
Hours Worked per week	.14*	.14**	-.01	.00	-.17**	.12	-.13*	-.12
Intent to Stay	-.11	-.11	-.14*	-.14*	.17**	-.05	.10	.13*
Motivation 1	-.12	-.12	-.21**	-.22**	.08	-.17**	.24**	.18**
Motivation 2	-.00	-.01	-.16*	-.16**	.06	-.09	.08	.12
Compensation (wages)	.01	,00	-.12*	-.12*	-.07	.19**	.05	.02
Compensation (salary)	-.03	-.03	-.08	-.09	-.06	.20*	.00	.05
Note. * p<.05 **p<.01								

One-way ANOVAs were conducted for all the categorical socio-demographical variables in order to determine differences on the justice or stress variables. Additional socio-demographic variables that demonstrated significant relationships with the dependent variable job stress were cohesiveness of current employment with future plans, F (5, 256) = 2.527, p<.05 (question 15 on Appendix D), and time and permanency, F (3, 258) = 4.220, p<.01 (question 12 on Appendix D). Categorical descriptive statistics for significant relationships between the socio-demographic variables and job stress can be found on Table 3. Cohesiveness with future plans assessed how the participants' current job fit in with their plans for future employment; time and permanency assessed whether the participant's job was full or part time as well as temporary or permanent. All of the significant socio-demographic variables were entered into the regression models as controls in testing the remaining hypotheses. Months employed and hours worked were entered into the equation as continuous variables. Before entering the categorical variables into the equation, the future plans variable was dummy coded with "temporary employment with a different company and different field" as a reference group and the time and permanency variable was dummy coded with "part-time and temporary " as a reference group.

Table 2.3 Socio-demographic descriptive statistics

	Job Stress		BSI		
	M	*SD*	*M*	*SD*	
Gender					
Female	2.51	.781	1.78	.693	
Male	2.38	.81	1.5	.53	
Ethnicity					
Asian	2.65	.68	1.95	.73	
African American	2.32	.79	1.77	.79	
Caucasian	2.42	.75	1.63	.59	
Hispanic	2.68	.95	1.76	.74	
Multiracial	2.46	.79	1.69	.65	
Time and Permanency					
Full time and temporary	2.32	.77	1.67	.63	
Full time and permanent	2.4	.77	1.8	.76	
Part time and permanent	2.81	.81	1.87	.71	
Part time and temporary	2.47	.76	1.52	.53	
Cohesion with future plans					
Permanent job/same company	2.58	.71	1.82	.78	
Permanent job/different company/same field	2.57	.821	1.69	.57	
Permanent job/different company/different field	2.34	.39	1.94	.73	
Already permanent	2.46	.78	1.57	.712	
Temporary job/company	2.00	.62	1.33	.42	
Note. * $p < .05$ ** $p < .001$					

The second dependent variable (overall stress, as scored from the BSI) was correlated with many of the socio-demographic variables (see Table 2). Age, months employed, intent to stay (question 11 on Appendix D), and motivation to work (question 13 on Appendix D) all demonstrated negative relationships with overall stress and were entered into the regression models as controls. Of the categorical socio-demographic variables, three demonstrated significant relationships: gender, F (1, 259) = 12.134, p<.001, ethnicity, F (4, 257) = 2.99, p<.05, and time and permanency, F (3, 258) = 3.51, p<.05 (see Table 3), and were also entered into the models as controls. Both ethnicity (reference group = multi-racial) and time and permanency (reference group = part-time/temporary) were dummy-coded prior to entering them into the models.

Hypotheses two through five were tested using hierarchical regression models. These analyses were performed using SPSS REGRESSION for both the analyses and evaluation of assumptions. To facilitate interpretation and address potential problems of multicollinearity, the justice predictors were centered prior to analysis (Cohen & Cohen, 1983; Kleinbaum, Kupper, & Muller, 1988). For all regression analyses, results were deemed significant at an alpha level of $p < .05$.

Hypothesis two tested the relationship between the four perceived justice variables (distributive, procedural, interpersonal, and informational) and stress. After entering the socio-demographic variables as a control in the first step, both measures of stress were individually regressed against all four justice variables in two separate equations. For the job stress dependent variable, the first step included hours worked, months employed, cohesion with future plans, and time and permanency; for the BSI stress dependent variable, the first step included age, ethnicity, gender, intent to stay, months employed, motivation to work, and time and permanency.

The third and fourth hypotheses suggested interactions among the four justice variables and were tested using a moderated hierarchical regression. Again, the analysis was conducted

using centered predictors to minimize multicollinearity problems associated with moderated relationships (Cohen & Cohen, 1983; Kleinbaum, Kupper, & Muller, 1988). In two separate stress regression models (one for job stress and one for overall stress), the socio-demographic variables (Job stress: hours worked, months employed, cohesion with future plans, and time and permanency; BSI: age, ethnicity, gender, intent to stay, months employed, motivation to work, and time and permanency) were entered in the first step, and the four justice dimensions were entered as separate variables in the second step as control procedures for the main effects. On the third step, the two-way interactions between procedural and distributive justice (Hypothesis 3), distributive and interpersonal (Hypothesis 4a), distributive and informational (Hypothesis 4b), procedural and interpersonal (Hypothesis 4c) and procedural and informational (Hypothesis 4d) were entered to assess the moderating effects of the justice variables.

In order to test the fifth hypothesis, two separate moderated hierarchical regression models were used, one for job stress and one for overall stress. These analyses assessed the three-way interactions for distributive, procedural, and informational/interpersonal justice variables as regressed on stress. Using centered justice predictors, the first step included the socio-demographic variables, followed by the second step (the four justice dimensions entered as separate control variables for the main effects), and the third step (the two-way interactions entered as controls for the two-way effects of the justice variables). For the fourth step, cross-products of the three predictors (i.e., distributive, procedural, and interpersonal; distributive, procedural, and informational) were entered. Any influence in variance that the three-way interactions had over and above the control procedures indicates a three-way interaction. For a complete list of hypotheses, measures, and analysis see Table 2.4.

Table 2.4 Research questions, hypotheses, instrumentation, and methodology

Research Questions	Hypotheses	Instrumentation	Methodology
1. Can organizational justice be conceptualized into four distinct justice variables?	H1: Organizational justice can be measured using four independent justice variables.	Organizational Justice Measure (OJM)	Confirmatory Factor Analysis
2. Will the four perceived organizational justice variables affect perceived stress?	H2: There will be a significant negative relationship between the four perceived justice variables (distributive, procedural, interpersonal, and informational) and stress, such that each justice variable will demonstrate unique effects in predicting stress.	IV: OJM (all four variables) DV: The Job Stress Scale and The Brief Symptom Inventory (BSI)	Sequential multiple regression
3. Will the relationship between perceived stress and procedural justice be altered based on distributive justice?	H3: The negative relationship between procedural justice and stress will be moderated by distributive justice, such that the relationship will be stronger when distributive justice is low.	IV: OJM (procedural) DV: The Job Stress Scale and BSI Moderator: OJM (distributive)	Sequential multiple regression
4. Will the relationships between procedural justice and perceived stress, and distributive justice and perceived stress be altered based on interpersonal / informational justice?	H4a: The negative relationship between distributive justice and stress will be moderated by interpersonal justice, such that the relationship will be stronger when interpersonal justice is low. H4b: The negative relationship between distributive justice and stress will be moderated by informational justice, such that the relationship will be stronger when informational justice is low.	IV: OJM (distributive) DV: The Job Stress Scale and BSI Moderator: OJM (interpersonal) IV: OJM (distributive) DV: The Job Stress Scale BSI Moderator: OJM (informational)	Sequential multiple regression

Table 2.4- *Continued*

	H4c: The negative relationship between procedural justice and stress will be moderated by interpersonal justice, such that the relationship will be stronger when interpersonal justice is low. H4d: The negative relationship between procedural justice and stress will be moderated by informational justice, such that the relationship will be stronger when interpersonal justice is low.	IV: OJM (procedural) DV: The Job Stress Scale and BSI Moderator: OJM (interpersonal) IV: OJM (procedural) DV: The Job Stress Scale and BSI Moderator: OJM (informational)	
5. Will the relationship between perceived stress and the interaction of procedural justice and distributive justice be altered based on interpersonal and/or informational justice?	H5a: The relationship between the interaction of procedural and distributive justice with stress will be moderated by interpersonal justice, such that the relationship will be the strongest when interpersonal justice is low. H5b: The relationship between the interaction of procedural and distributive justice with stress will be moderated by informational justice, such that the relationship will be the strongest when informational justice is low.	IV: OJM (procedural x distributive) DV: The Job Stress Scale and BSI Moderator: OJM (interpersonal) IV: OJM (procedural x distributive) DV: The Job Stress Scale and BSI Moderator: OJM (informational)	Sequential multiple regression

CHAPTER 3

RESULTS

Prior to performing the main analyses, frequency tables, distributions and univariate descriptive statistics were examined in order to determine normality for all the study variables. Analysis was performed using SPSS EXPLORE for evaluation of assumptions. The job stress and BSI stress variables were notably skewed in a positive direction (job stress skewness = .502; BSI skewness= 1.016), with probable range restriction due to the low means (job stress *M*= 2.47, *SD*= .79; BSI *M*= 1.69, *SD*= .66). In order to approximate a normal distribution and modify outliers, a logarithmic transformation was performed on the averaged job stress variable, as well as the BSI stress variable (transformed job stress skewness = -.008; transformed BSI skewness = .634). Not only did the transformed variables appear to approximate a normal distribution, but they also accounted for most of the outliers that were previously found in the untransformed variables. It should be noted that an inverse transformation on the BSI stress variable was also attempted but determined inadequate due to a large increase in kurtosis. The logarithmically transformed stress variables were used throughout the analyses. Descriptive statistics for both original and transformed variables can be found on the table 3.1. It should be noted that analyses were conducted for both the transformed variables and non-transformed variables and any differences in overall findings were highlighted throughout the paper. Due to the robust nature of the analyses, no other transformations were deemed necessary.

Table 3.1 Correlations between organizational justice and stress variables

	Procedural Justice	Distributive Justice	Interpersonal Justice	Informational Justice	Job Stress	BSI	*Mean*	*SD*	Range
Procedural Justice							3.28	0.7	1.29 – 4.86
Distributive Justice	.604**						3.19	1.04	1.00 -- 5.00
Interpersonal Justice	.333**	.203**					3.98	0.73	1.50 -- 5.00
Informational Justice	.518**	.425**	.556**				3.54	0.79	1.20 -- 5.00
Job Stress	-.162**	-.174**	-.196**	-.248**			2.47	0.79	1.00 -- 5.00
BSI	-.072	-.019	-.162**	-.043	.534**		1.69	0.66	1.00 – 4.02
Anxiety	-.016	-.011	-.099	-.015	.536**	.907**	1.82	0.79	1.00 -- 5.00
Somatization	-.112	-.030	-.212**	-.050	.426**	.870**	1.53	0.63	1.00 – 3.86
Depression	-.075	-.013	-.140	-.053	.462**	.904**	1.73	0.79	1.00 -- 4.86

Note. * p < .05 ** p < .01

In addition, data were observed for missingness before the primary analyses. Of the remaining 262 participants, 3 participants had missing justice variables. The three participants did not answer one or more dimensions with regard to organizational justice. Further investigation of missingness was deemed unnecessary due to the small number of missing variables. Thus, these three participants were not included in the primary analyses.

3.1 Confirmatory Factor Analyses

For Hypothesis One, a confirmatory factor analysis was conducted using AMOS. Four different factors were compared in order to determine which model was the best fit. The first model was a one-factor model in which all the variables were parts of a larger organizational justice factor. The next model, a two-factor structure, contained a distributive justice factor and a procedural justice factor which contained both the informational and interpersonal variables. The three-factor model was the third to be tested and it contained a distributive factor, a procedural factor, and an interactional factor that subsumed the informational and interpersonal variables. The two-factor model and three-factor model are currently the most commonly used models in organizational literature (Colquitt, 2001). Lastly, as suggested by Colquitt, the four-factor model was tested against the other models to determine the best fit. This final model can be found in Figure 3.1.

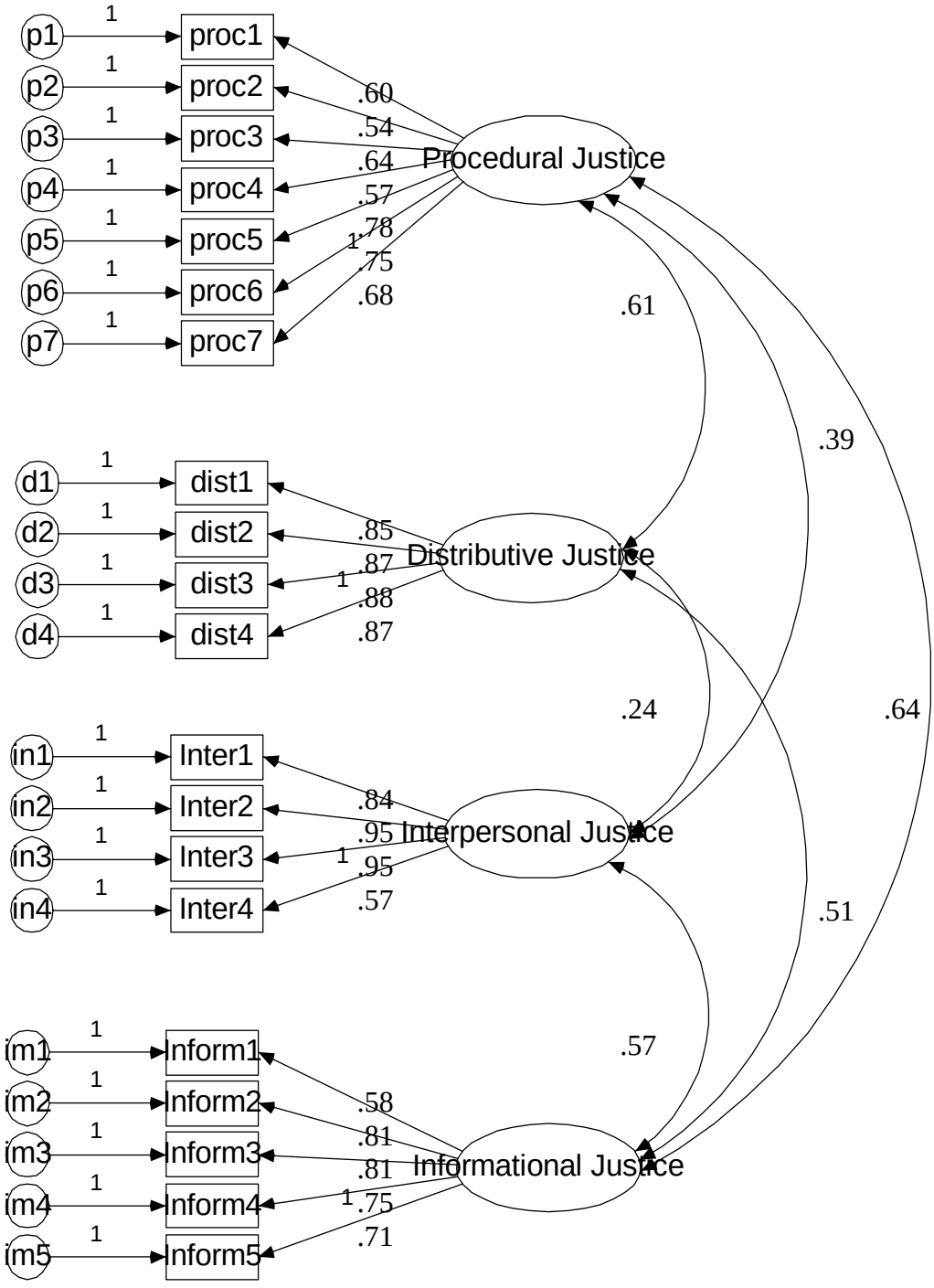

Figure 3.1 Standardized regression weights of the four-factor model of organizational justice

Fit statistics for all four of these models can be found in Table 3.2. Chi-square was utilized as an index of absolute model fit because it assessed the degree of match between the model's implied covariances and the observed covariances. Chi-square was also gauged by its degrees of freedom to account for the inflation due to the sample size; good fit was indicated by a ratio of 2 (Arbuckle, 1997). As noted in the table, the four-factor model seemed to be a better fit than the other three models.

Table 3.2 also contains the incremental fit index (IFI), the comparative fit index (CFI) and the Root Means Squared Error of Approximation (RMSEA). The IFI and CFI both compare the model fit to a baseline that lacks covariances (Bentler, 1990). As previously mentioned, .90 for each of these indices indicates, albeit arbitrarily, a good fit; the four-factor model is the only model of the four to meet this criteria (IFI = .91; CFI = .91). The RMSEA is an index that indicates the discrepancy between a model with ideal but unknown parameter values and the population covariance matrix (Browne & Cudeck, 1993). While a RMSEA of zero would be perfect, it is unrealistic and thus a commonly used indicator of good fit is .05. However, it has also been suggested that values below .08, such as the RMSEA for this model should still be indicators of reasonable fit (Browne & Cudeck, 1993). The models with one, two, or three factors did not fit the data; however, the four-factor model met the guidelines of reasonable fit for all the utilized indices.

Another indication of the best fitting model is a chi-square difference test. This type of indicator is utilized when models are nested within each other as exemplified by the three-factor and four-factor models in this study. In order to test this difference, the literal difference between the chi-squares (838.0 – 455.1 = 383.9) is distributed as a chi-square with the degrees of freedom as indicated by the differences in the model degrees of freedom (167-164 = 3). Results show this test of chi-squares was also significant, indicating the four-factor model was a better fit. However, this type of test is not without controversy and there is some debate whether the four-factor model is truly nested within the three-factor model (Colquitt, 2001). Therefore, it was

beneficial to observe the 90% confidence intervals of the RMSEA as well. An overlap in confidence intervals suggest a lack of difference between the models; however, it is apparent that the confidence intervals for this study do not overlap, thus indicating a true difference between the models.

Table 3.2 Comparison of organizational justice factor structures (H1)

Model	X^2	*df*	X^2/df	IFI	CFI	RMSEA	RMSEA CI
1-Factor	1766.9	170	10.39	.51	.51	.187	(.179, .195)
2-Factor	1266.8	169	7.50	.67	.66	.155	(.147, .163)
3-Factor	838.0	167	5.02	.79	.79	.122	(.114, .131)
4-Factor	455.1	164	2.77	.91	.91	.079	(.072, .090)
Note. All X^2 values are significant a $p < .001$. IFI = incremental fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation							

The results of the confirmatory factor analysis are similar to those reported in the development and validation of the organizational justice measure by Colquitt (2001); the four-factor solution: $\chi^2(406, N = 337) = 845.52$, $p < .001$; $\chi^2/df = 2.08$; (RMSR) = .057; (CFI = .94; IFI = .94). These results are in support of the first hypothesis that organizational justice was best defined using four separate factors: procedural justice, distributive justice, interpersonal justice and informational justice. The indices of fit indicated a reasonable fit for the four-factor model. Further, difference scores suggested that the four-factor model fit the data better than did any of the other three models. As expected, the confirmatory factor analysis was consistent with similar past results (e.g., Colquitt, 2001; Judge & Colquitt, 2004) in that the four-factor model was a better fit of the data over and above the other three- and two-factor models. The average standardized item loadings for each of the factors were procedural justice = .63, distributive

justice = .87, interpersonal justice= .82, and informational justice = .73. The standardized regression weights can be found on Figure 1.

3.2 Sequential Regression Models

For the remaining four hypotheses (two through five), hierarchical regression analyses were conducted in order to observe the predictive relationship among the justice variables and perceived stress. Descriptive statistics and intercorrelations among the study variables can be found on Table 5. As indicated by the correlations, all four justice variables have negative relationships with job stress; however, the only significant justice correlate of the BSI stress variable was interpersonal justice.

In addition to the previous evaluation of assumptions, residual distributions were examined for linearity, homoscedasticity, and independence using SPSS REGRESSION. Two missing socio-demographic items (two participants did not answer the future plans question) were identified at this stage and were not included in the job stress regression analyses. Similarly for the BSI stress analyses, two missing socio-demographic items for motivation to work were identified and also not included in the analyses.

3.2.1 Hypothesis 2

3.2.1.1 Job Stress Variable

In order to determine if the organizational justice dimensions would predict job stress over and above hours worked, months employed, cohesiveness of current employment with future plans and time and permanency, a hierarchical regression was conducted and results are displayed on Table 3.3. After all the variables were placed into the equation as previously described, 17% of the variance was predicted, $F(14, 243) = 3.588$, $p < .001$. The first step was significant, and included the socio-demographic variables hours worked, months employed, cohesion with future plans, and time and permanency, $R^2 = .12$, $F_{inc}(10, 247) = 3.306$, $p<.001$. As expected, the addition of the four justice variables had a significant increment in $R^2_{\Delta}=.053$, and justice was negatively associated with job stress. In other words, organizational justice

accounted for 5% more of the variance than the socio-demographic variables did alone, $F_{\Delta}(4, 243) = 3.905$, $p<.01$. As indicated in the hypothesis, the unique variance accounted for by each of the justice variables was of particular interest in this analysis; however there were no unique predictors. Although all of the justice variables were not uniquely significant, directionally, all the beta-weights demonstrated negative relationships.

Table 3.3 Regression analysis for job stress (H2)

Variable	*B*	*SE B*	β	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.100	-.083	.699	
Hours Worked	.008	.009	.086	.052	.364	$R^2 = .118$**
Cohesiveness[a]	.094	.031	.360*	.180	.251	Adjusted $R^2 = .082$
Cohesiveness[b]	.081	.028	.409*	.171	.175	R = .344**
Cohesiveness[c]	.061	.045	.101	.081	.644	
Cohesiveness[d]	.043	.030	.173	.086	.248	
Cohesiveness[e]	.061	.031	.190*	.118	.383	
Full Time Temporary	-.040	.023	-.195	-.103	.281	
Full Time Permanent	-.024	.024	-.094	-.058	.383	
Part Time Permanent	.009	.020	.036	.028	.604	

Table 3.3- *Continued*

Step 2						
Months Employed	.000	.000	-.132	-.108	.661	
Hours Worked	.006	.009	.059	.036	.361	
Cohesiveness[a]	.069	.031	.264*	.127	.233	
Cohesiveness[b]	.054	.029	.275	.110	.158	
Cohesiveness[c]	.030	.045	.049	.038	.613	R^2 = .171*
Cohesiveness[d]	.020	.030	.081	.039	.229	Adjusted R^2 = .124
Cohesiveness[e]	.031	.032	.095	.056	.347	R = .414*
Full Time Temporary	-.038	.023	-.185	-.097	.278	$R^2\Delta$ = .053*
Full Time Permanent	-.017	.024	-.067	-.041	.366	
Part Time Permanent	.013	.019	.049	.038	.601	
Procedural (centered)	-.002	.012	-.011	-.008	.511	
Distributive (centered)	-.008	.007	-.081	-.062	.584	
Interpersonal (centered)	-.012	.010	-.088	-.071	.655	
Informational (centered)	-.016	.010	-.129	-.093	.521	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05** p < .001

While these results were unexpected, an investigation of collinearity statistics helps to explain the lack of findings. The tolerance for the justice variables ranged from .511 to .655, indicating the possibility of shared variance. Indeed, the high correlations across these four variables, as indicated in Table 3.1, are problematic in determining individual relationships with the dependent variable of job stress. In order to partial out some of this shared variance, it was helpful to examine the excluded variable statistics in the regression analysis to reveal results

independent of other variables included in the analyses. As indicated on Table 3.4, all four justice variables significantly predicted job stress independently.

Table 3.4 Excluded variables in the analysis for job stress (H2)

Variable	B	t
Procedural (centered)	-.152	-2.402*
Distributive (centered)	-.156	-2.491*
Interpersonal (centered)	-.175	-2.891*
Informational (centered)	-.214	-3.560**
Note. * p <.05; ** p < .001		

However, it should be noted that the excluded variable statistics do not control for the socio-demographic variables. Thus, further sequential regression models were computed in which the socio-demographic variables were entered in as a controls in the first step, and then one justice variable at a time was entered in the second step. These analyses indicated that after controlling for hours worked, months employed, cohesion with future plans, and time and permanency, procedural justice (alone) predicted job stress, $F_{\Delta}(1, 249) = 5.384$, $p<.05$, $R^2_{\Delta} = .019$; distributive justice (alone) predicted job stress, $F_{\Delta}(1, 248) = 7.060$, $p<.05$, $R^2_{\Delta} = .024$; interpersonal justice (alone) predicted job stress, $F_{\Delta}(1, 246) = 8.355$, $p<.01$, $R^2_{\Delta} = .029$; and informational justice (alone) predicted job stress, $F_{\Delta}(1, 247) = 15.774$, $p<.001$, $R^2_{\Delta} = .053$ (see Tables 9 through 12). While these findings lend partial support to the second hypothesis, they can not be interpreted as independent predictors.

Table 3.5 Regression analysis for job stress on distributive justice only (H2)

Variable	*B*	*SE B*	β	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.100	-.084	.698	
Hours Worked	.008	.009	.085	.051	.362	R^2 = .117**
Cohesiveness[a]	.092	.031	.349*	.174	.250	Adjusted
Cohesiveness[b]	.079	.029	.398*	.166	.173	R^2 = .082
Cohesiveness[c]	.059	.045	.097	.078	.644	R = .342**
Cohesiveness[d]	.046	.030	.184	.091	.244	
Cohesiveness[e]	.060	.031	.185	.115	.383	
Full Time Temporary	-.039	.023	-.189	-.100	.279	
Full Time Permanent	-.024	.025	-.092	-.057	.383	
Part Time Permanent	.015	.020	.057	.044	.600	
Step 2						
Months Employed	.000	.000	-.124	-.103	.687	
Hours Worked	.007	.009	.079	.048	.362	
Cohesiveness[a]	.076	.032	.287*	.141	.241	
Cohesiveness[b]	.062	.029	.313*	.127	.165	
Cohesiveness[c]	.041	.045	.066	.053	.628	R^2 = .142*
Cohesiveness[d]	.026	.031	.102	.049	.229	Adjusted
Cohesiveness[e]	.040	.032	.123	.074	.361	R^2 = .104
Full Time Temporary	-.036	.023	-.173	-.091	.278	R = .376*
Full Time Permanent	-.013	.025	-.052	-.032	.374	$R^2\Delta$ = .024*
Part Time Permanent	.017	.020	.065	.050	.599	
Distributive (centered)	-.016	.006	-.165*	-.156	.895	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05 ** p < .001

Table 3.6 Regression analysis for job stress on procedural justice only (H2)

Variable	*B*	*SE B*	β	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.100	-.084	.698	
Hours Worked	.008	.009	.086	.052	.363	R^2 = .117**
Cohesiveness[a]	.092	.031	.348*	.174	.250	Adjusted
Cohesiveness[b]	.079	.028	.399*	.166	.172	R^2 = .082
Cohesiveness[c]	.059	.045	.097	.078	.644	R = .342**
Cohesiveness[d]	.046	.030	.183	.091	.244	
Cohesiveness[e]	.060	.031	.185*	.115	.383	
Full Time Temporary	-.039	.023	-.188	-.099	.278	
Full Time Permanent	-.023	.025	-.091	-.057	.383	
Part Time Permanent	.015	.020	.057	.044	.600	
Step 2						
Months Employed	.000	.000	-.133	-.109	.671	
Hours Worked	.008	.009	.084	.051	.363	
Cohesiveness[a]	.073	.032	.278*	.134	.235	
Cohesiveness[b]	.059	.030	.297*	.118	.157	
Cohesiveness[c]	.039	.046	.064	.050	.620	R^2 = .136*
Cohesiveness[d]	.029	.031	.114	.055	.230	Adjusted
Cohesiveness[e]	.038	.032	.118	.070	.351	R^2 = .098
Full Time Temporary	-.036	.023	-.172	-.091	.277	R = .369*
Full Time Permanent	-.015	.025	-.058	-.036	.375	$R^2\Delta$ = .019*
Part Time Permanent	.016	.020	.063	.049	.599	
Procedural (centered)	-.022	.009	-.146*	-.137	.871	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05 ** p < .001* p <.05

Table 3.7 Regression analysis for job stress on interpersonal justice only (H2)

Variable	*B*	*SE B*	β	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.100	-.083	.699	
Hours Worked	.008	.009	.086	.052	.364	R^2 = .118**
Cohesiveness[a]	.094	.031	.360*	.180	.251	Adjusted
Cohesiveness[b]	.081	.028	.409*	.171	.175	R^2 = .082
Cohesiveness[c]	.061	.045	.101	.081	.644	R = .344**
Cohesiveness[d]	.043	.030	.173	.086	.248	
Cohesiveness[e]	.061	.031	.190	.118	.383	
Full Time Temporary	-.040	.023	-.195	-.103	.281	
Full Time Permanent	-.024	.024	-.094	-.058	.383	
Part Time Permanent	.009	.020	.036	.028	.604	
Step 2						
Months Employed	.000	.000	-.095	-.080	.698	
Hours Worked	.006	.009	.065	.039	.362	
Cohesiveness[a]	.083	.031	.317*	.158	.247	
Cohesiveness[b]	.071	.028	.361*	.150	.172	
Cohesiveness[c]	.042	.045	.070	.056	.631	R^2 = .147*
Cohesiveness[d]	.036	.030	.146	.073	.246	Adjusted
Cohesiveness[e]	.049	.031	.152	.093	.376	R^2 = .109
Full Time Temporary	-.038	.023	-.184	-.098	.281	R = .383*
Full Time Permanent	-.020	.024	-.079	-.049	.382	$R^2\Delta$ = .029*
Part Time Permanent	.012	.019	.046	.036	.603	
Interpersonal (centered)	-.023	.008	-.175*	-.170	.950	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05 ** p < .001

Table 3.8 Regression analysis for job stress on informational justice only (H2)

Variable	*B*	*SE B*	β	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.099	-.083	.699	
Hours Worked	.008	.009	.088	.053	.363	R^2 = .118**
Cohesiveness[a]	.092	.031	.351*	.176	.251	Adjusted
Cohesiveness[b]	.079	.029	.396*	.165	.174	R^2 = .082
Cohesiveness[c]	.060	.045	.098	.078	.643	R = .344**
Cohesiveness[d]	.047	.030	.186	.092	.244	
Cohesiveness[e]	.060	.031	.186	.115	.383	
Full Time Temporary	-.039	.023	-.189	-.100	.281	
Full Time Permanent	-.023	.025	-.090	-.056	.383	
Part Time Permanent	.015	.020	.057	.044	.601	
Step 2						
Months Employed	.000	.000	-.136	-.112	.686	
Hours Worked	.006	.009	.063	.038	.361	
Cohesiveness[a]	.074	.031	.282*	.140	.245	
Cohesiveness[b]	.058	.028	.290*	.119	.168	
Cohesiveness[c]	.039	.044	.064	.051	.635	R^2 = .171**
Cohesiveness[d]	.030	.030	.120	.059	.240	Adjusted
Cohesiveness[e]	.037	.031	.115	.070	.369	R^2 = .134
Full Time Temporary	-.041	.023	-.198	-.105	.280	R = .414**
Full Time Permanent	-.024	.024	-.095	-.059	.383	$R^2\Delta$= .053**
Part Time Permanent	.014	.019	.056	.044	.601	
Informational (centered)	-.030	.007	-.237*	-.230	.947	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05** p < .001* p <.05

3.2.1.2 BSI Stress Variable

Similar analyses were conducted with the BSI stress variable as the dependent variable. Hierarchical regression models that controlled for age, gender, ethnicity, intent to stay, months employed, motivation to work, and time and permanency were computed in order to examine the predictive ability of the organizational justice variables on stress as indicated from the BSI (see Table 3.9). Once all the variables were entered into the equation, the overall model was significant, $F(16, 241) = 3.533$, $p < .001$. The first step indicated that the seven socio-demographic variables were significant, $R^2 = .173$, $F_{inc}(12, 245) = 4.276$, $p < .001$. Surprisingly, the addition of the four justice variables did not have a significant increment in $R^2_{\Delta} = .017$, $F_{\Delta}(4, 241) = 1.252$, *ns*. Similarly, none of the organizational justice variables were individually significant predictors of the perceived overall stress variable. Thus, Hypothesis Two suggesting the predictive ability of organizational justice variables on general stress, lacked sufficient support.

Table 3.9 Regression analysis for the BSI (H2)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.068	-.054	.639	
Age	-.001	.001	-.059	-.044	.566	R^2 = .173**
Intent to Stay	.001	.004	.019	.014	.579	Adjusted
Ethnicity[a]	.065	.029	.238*	.131	.304	R^2 = .133
Ethnicity[b]	.035	.025	.113	.084	.559	R = .416**
Ethnicity[c]	.076	.030	.326*	.147	.202	
Ethnicity[d]	.067	.026	.335*	.147	.193	
Full Time Temporary	-.008	.018	-.040	-.026	.431	
Full Time Permanent	.014	.020	.054	.041	.577	
Part Time Permanent	.042	.020	.161*	.124	.587	
Motivation to Work	-.013	.005	-.179*	-.161	.808	
Gender	.046	.013	.220**	.209	.906	
Step 2						
Months Employed	.000	.000	-.060	-.048	.625	
Age	-.001	.001	-.073	-.055	.557	
Intent to Stay	.002	.004	.034	.025	.547	
Ethnicity[a]	.062	.029	.227*	.124	.299	
Ethnicity[b]	.040	.025	.126	.093	.548	R^2 = .190
Ethnicity[c]	.070	.030	.302*	.134	.199	Adjusted
Ethnicity[d]	.066	.026	.332*	.145	.192	R^2 = .136
Full Time Temporary	-.003	.019	-.015	-.009	.418	R = .436
Full Time Permanent	.021	.020	.083	.061	.540	$R^2\Delta$ = .017
Part Time Permanent	.045	.020	.174*	.133	.580	
Motivation to Work	-.012	.005	-.154*	-.091	.535	
Gender	.044	.013	.209**	-.027	.612	

Table 3.9- *Continued*

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Procedural (centered)	-.011	.012	-.078	-.117	.631	
Distributive (centered)	.000	.007	-.001	-.001	.579	
Interpersonal (centered)	-.019	.010	-.137	-.109	.627	
Informational (centered)	.011	.010	.089	.064	.516	
Note. [a] Asian; [b] African American/Black; [c] Caucasian/White; [d] Hispanic/Latino; reference group = multi-racial. * p <.05 ** p < .001						

As conducted with the job stress dependent variable, independent regression models were computed in order to examine the predictive ability of each of the justice variables on overall stress as measured by the BSI. While controlling for the socio-demographic variables in step one, the single justice variables were entered into four separate equations in step two. None of the individual justice variables were significant predictors of BSI stress, leaving Hypothesis Two unsupported.

3.2.2 Hypothesis 3

3.2.2.1 Job Stress Variable

Further analyses assessing a possible interaction between distributive justice and procedural justice were conducted using moderated multiple regression analyses. First, the control variables entered into the equation were the socio-demographic variables (hours worked, months employed, cohesion with future plans, and time and permanency). In controlling for the main effects, the centered procedural and distributive justice variables were entered on the second step. On the third step, the cross-product of procedural and distributive justice was entered into the equation in order to test the interaction effects.

Table 3.10 shows the results of the hierarchical regression analyses. The overall model was significant, $F(13, 246) = 3.394$, $p < .001$ and accounted for 15% of the variance in job stress. However, the change in R^2 for both steps two and three was not significant, indicating a

lack of support for the interaction effects expected in Hypothesis Three. After step one, F_{inc} (10, 249) = 3.306, p<.001 with an R^2_{Δ} = .117*;* after step two, F_{Δ} (2, 247) = 4.023, p<.05 with an R^2_{Δ} = .028*.* The final step with the cross-product entered was not significant, F_{Δ}(1, 246) = 2.046, *ns*, R^2_{Δ} = .007*.* While the organizational justice beta weights demonstrated negative directionality, none of the justice variables or the interaction, were significant.

Table 3.10 Regression analysis investigating the interaction of procedural and distributive justice on job stress (H3)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.100	-.084	.698	
Hours Worked	.008	.009	.085	.051	.362	R^2= .117**
Cohesiveness[a]	.092	.031	.349*	.174	.250	Adjusted R^2 = .082
Cohesiveness[b]	.079	.029	.398*	.166	.173	R = .342**
Cohesiveness[c]	.059	.045	.097	.078	.644	
Cohesiveness[d]	.046	.030	.184	.091	.244	
Cohesiveness[e]	.060	.031	.185	.115	.383	
Full Time Temporary	-.039	.023	-.189	-.100	.279	
Full Time Permanent	-.024	.025	-.092	-.057	.383	
Part Time Permanent	.015	.020	.057	.044	.600	

Table 3.10- *Continued*

Step 2						
Months Employed	.000	.000	-.135	-.111	.671	
Hours Worked	.008	.009	.080	.048	.362	
Cohesiveness[a]	.070	.032	.266*	.129	.234	R^2= .145*
Cohesiveness[b]	.056	.030	.282	.112	.157	Adjusted
Cohesiveness[c]	.035	.046	.057	.045	.618	R^2 = .104
Cohesiveness[d]	.022	.031	.087	.041	.226	R = .381*
Cohesiveness[e]	.034	.032	.104	.062	.348	$R^2\Delta$= .028*
Full Time Temporary	-.035	.023	-.168	-.089	.277	
Full Time Permanent	-.012	.025	-.045	-.028	.372	
Part Time Permanent	.017	.020	.066	.051	.599	
Procedural (centered)	-.011	.011	-.076	-.058	.593	
Distributive (centered)	-.012	.007	-.123	-.096	.609	
Step 3						
Months Employed	.000	.000	-.133	-.109	.670	
Hours Worked	.008	.009	.083	.050	.361	
Cohesiveness[a]	.066	.032	.251*	.121	.232	
Cohesiveness[b]	.052	.030	.258	.102	.156	
Cohesiveness[c]	.030	.046	.050	.039	.615	R^2 = .112
Cohesiveness[d]	.017	.031	.068	.032	.223	Adjusted
Cohesiveness[e]	.032	.032	.100	.059	.348	R^2 = .107
Full Time Temporary	-.034	.023	-.166	-.087	.277	R = .390
Full Time Permanent	-.011	.025	-.043	-.026	.372	$R^2\Delta$ = .007
Part Time Permanent	.018	.019	.069	.054	.598	
Procedural (centered)	-.014	.011	-.093	-.071	.578	
Distributive (centered)	-.013	.007	-.139	-.107	.596	
P x D (cross-product)	-.012	.008	-.090	-.084	.873	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05 ** p < .001

3.2.2.2 BSI Stress Variable

As a further test of Hypothesis Three, the BSI stress variable was regressed on the procedural and distributive justice variables, as well as their cross-product in order to test an interactional effect. The socio-demographic variables (age, ethnicity, gender, intent to stay, months employed, motivation to work, and time and permanency) were entered in the first step, followed by procedural and distributive justice in the second step, and the cross-product in the third step. After the first step, F_{inc} (12, 247) = 4.311, p <.001; R^2_{Δ} = .173, the additional steps were not significant, lending no support for Hypothesis Three. The justice variable beta weights were directionally hypothesized in the negative direction, albeit insignificant. Thus, there were no interaction effects of procedural and distributive justice on either job stress or overall stress, providing no support for Hypothesis Three.

Table 3.11 Regression analysis investigating the interaction of procedural and distributive justice on BSI (H3)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.068	-.054	.639	
Age	-.001	.001	-.059	-.044	.566	R^2 = .173**
Intent to Stay	.001	.004	.019	.014	.579	Adjusted
Ethnicity[a]	.065	.029	.238*	.131	.304	R^2 = .133
Ethnicity[b]	.035	.024	.113	.084	.559	R = .416**
Ethnicity[c]	.076	.030	.326*	.147	.202	
Ethnicity[d]	.067	.026	.335*	.147	.193	
Full Time Temporary	-.008	.018	-.040	-.026	.431	
Full Time Permanent	.014	.020	.054	.041	.577	
Part Time Permanent	.042	.019	.161*	.124	.587	
Motivation to Work	-.013	.005	-.179*	-.161	.808	
Gender	.046	.013	.220**	.209	.906	

Table 3.11- *Continued*

Step 2						
Months Employed	.000	.000	-.076	-.060	.633	
Age	-.001	.001	-.069	-.051	.560	
Intent to Stay	.002	.004	.034	.025	.547	
Ethnicity[a]	.066	.029	.241*	.133	.304	
Ethnicity[b]	.037	.025	.116	.086	.554	R^2 = .178
Ethnicity[c]	.074	.030	.321*	.144	.200	Adjusted
Ethnicity[d]	.068	.026	.341*	.150	.192	R^2 = .131
Full Time Temporary	-.007	.018	-.035	-.023	.425	R = .422
Full Time Permanent	.016	.020	.062	.046	.554	$R^2\Delta$ = .005
Part Time Permanent	.042	.020	.163*	.125	.584	
Motivation to Work	-.013	.005	-.169*	-.150	.793	
Gender	.047	.013	.222**	.211	.904	
Procedural (centered)	-.012	.011	-.083	-.063	.582	
Distributive (centered)	.002	.007	.016	.013	.602	
Step 3						
Months Employed	.000	.000	-.078	-.044	.556	R^2 = .186
Age	-.001	.001	-.059	.037	.537	Adjusted
Intent to Stay	.002	.004	.050	.123	.301	R^2 = .136
Ethnicity[a]	.062	.029	.224*	.090	.553	R = .431
Ethnicity[b]	.038	.024	.121	.130	.196	$R^2\Delta$ = .008
Ethnicity[c]	.068	.030	.293*	.142	.191	
Ethnicity[d]	.065	.026	.325*	-.020	.424	
Full Time Temporary	-.006	.018	-.031	.048	.554	
Full Time Permanent	.017	.020	.065	.127	.583	
Part Time Permanent	.043	.020	.166*	-.150	.793	
Motivation to Work	-.013	.005	-.169*	.209	.903	
Gender	.046	.013	.220**	-.077	.568	
Procedural (centered)	-.015	.011	-.102	.000	.590	
Distributive (centered)	.000	.007	.000	-.090	.848	
P x D (cross-product)	-.013	.008	-.098	-.062	.633	

Note. [a] Asian; [b] African American/Black; [c] Caucasian/White; [d] Hispanic/Latino; reference group = multi-racial.
* p <.05 ** p < .001

3.2.3 Hypothesis 4

3.2.3.1 Job Stress Variable

Similar to the above analyses, in order to test Hypotheses 4a and 4b, the interaction between distributive justice and interpersonal justice, as well as the interaction between distributive justice and informational justice were examined with a sequential regression. Likewise, to test Hypotheses 4c and 4d, analyses were conducted with the interactions involving procedural justice and either interpersonal or informational justice variables. The steps of this regression model follow suit to the models described above. After the socio-demographic variables (hours worked, months employed, cohesion with future plans, and time and permanency) were entered into the equation in the first step, the appropriate main effect variables were entered into the second step of the equation. For example, in Hypothesis 4a, the interaction between the distributive and interpersonal variables was assessed, so the control variables entered in step two were the centered distributive variable and the centered interpersonal variable. In step three, the cross-product of the centered variables was entered to examine the interaction effects. All four sub-hypotheses (4a through 4d) analyses were conducted in a similar fashion, and results for the interactions are located on Table 3.12.

Table 3.12 Third step of regression models investigating interactions on job stress (H4a-H4c)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	$R^2\Delta$
H4a Distributive x Interpersonal (cross-product)	-.003	.007	-.025	-.025	.934	.001
H4b Distributive x Informational (cross-product)	-.003	.007	-.026	-.025	.912	.001
H4c Procedural x Interpersonal (cross-product)	-.008	.011	-.046	-.043	.910	.002
Note. The data represents the third step for four different regression models for job stress * p <.05 ** p < .001						

Contrary to expectations, three out of four hypotheses predicting interactions among the justice variables were not significant; however, they were indicative of negative directionality. For Hypothesis 4a, the addition of the distributive interpersonal cross-product was not significant, $F_{\Delta}(1, 244) = .177$, *ns*, $R^2_{\Delta} = .001$; for Hypothesis 4b, the interaction between distributive justice and informational justice was also not significant $F_{\Delta}(1, 245) = .190$, *ns*, $R^2_{\Delta} = .001$. Interestingly, the interpersonal and informational variables were the only significant justice variables in either of the two equations; interpersonal justice uniquely accounted for 2% of the overall variance and informational justice uniquely accounted for 3% of the total variance in their separate models. The results of the interaction between procedural justice and interpersonal justice (Hypothesis 4c) were similar in that they demonstrated an overall lack of support for an interaction, $F_{\Delta}(1, 244) = .547$, *ns*, $R^2_{\Delta} = .002$. Again, the interpersonal justice variable was the only significant justice predictor and accounted for 2% of the total variance. However, supportive of Hypothesis 4d, the cross-product between procedural justice and informational justice demonstrated a significant interaction, $F_{\Delta}(1, 245) = 5.384$, $p<.05$, $R^2_{\Delta} = .020$.

Table 3.13 Regression analysis investigating the interaction of procedural and informational justice on job stress (H4d)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.099	-.083	.699	
Hours Worked	.008	.009	.088	.053	.363	$R^2 = .118$**
Cohesiveness[a]	.092	.031	.351*	.176	.251	Adjusted
Cohesiveness[b]	.079	.029	.396*	.165	.174	$R^2 = .082$
Cohesiveness[c]	.060	.045	.098	.078	.643	R = .344**
Cohesiveness[d]	.047	.030	.186	.092	.244	
Cohesiveness[e]	.060	.031	.186	.115	.383	
Full Time Temporary	-.039	.023	-.189	-.100	.281	
Full Time Permanent	-.023	.025	-.090	-.056	.383	
Part Time Permanent	.015	.020	.057	.044	.601	

Table 3.13- *Continued*

Step 2						
Months Employed	.000	.000	-.141	-.115	.670	
Hours Worked	.006	.009	.065	.039	.361	
Cohesiveness[a]	.071	.032	.270*	.131	.234	R^2 = .172**
Cohesiveness[b]	.055	.029	.273	.109	.158	Adjusted
Cohesiveness[c]	.036	.045	.059	.046	.619	R^2 = .131
Cohesiveness[d]	.027	.030	.108	.052	.230	R = .414**
Cohesiveness[e]	.034	.032	.104	.062	.350	$R^2\Delta$= .054**
Full Time Temporary	-.040	.023	-.194	-.102	.278	
Full Time Permanent	-.022	.024	-.087	-.053	.371	
Part Time Permanent	.015	.019	.058	.045	.599	
Procedural (centered)	-.005	.010	-.034	-.028	.668	
Informational (centered)	-.028	.009	-.221*	-.188	.726	
Step 3						
Months Employed	.000	.000	-.150	-.122	.668	
Hours Worked	.006	.009	.059	.036	.361	
Cohesiveness[a]	.066	.031	.249*	.120	.233	
Cohesiveness[b]	.049	.029	.243	.096	.157	
Cohesiveness[c]	.027	.045	.045	.035	.616	R^2 = .191*
Cohesiveness[d]	.021	.030	.082	.039	.228	Adjusted
Cohesiveness[e]	.028	.032	.087	.051	.348	R^2 = .148
Full Time Temporary	-.045	.023	-.216*	-.113	.276	R = .437*
Full Time Permanent	-.023	.024	-.089	-.054	.371	$R^2\Delta$ = .02*
Part Time Permanent	.011	.019	.042	.032	.595	
Procedural (centered)	-.008	.010	-.057	-.046	.656	
Informational(centered)	-.030	.009	-.237*	-.201	.718	
P x Im (cross-product)	-.025	.010	-.145*	-.140	.925	

Note. [a] permanent job/same company; [b] permanent job/different company/same field; [c] permanent job/different company/different field; [d] already permanent; [e] temporary job/company; reference group = temporary job/difference company/different field.
* p <.05 ** p < .001

For this fourth hypothesis, the final model was significant, $F_{\Delta}(13, 245) = 4.458$, $p<.001$, and unique predictors were informational justice (4% of variance) and the interaction (2% of variance). To assess the nature of the observed interaction, predicted job stress scores were plotted for a respondent scoring one standard deviation above and one standard deviation below the means of procedural and informational justice (Cohen & Cohen, 1983).

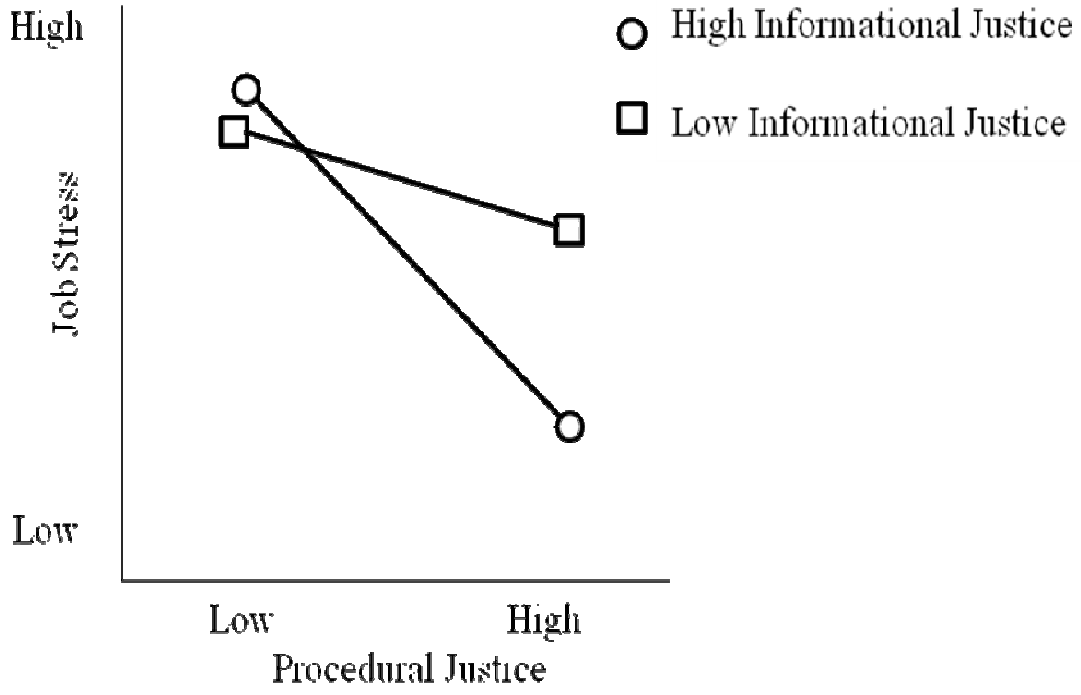

Figure 3.2 Interactive effect of procedural justice and informational justice on job stress

3.2.3.2 BSI Stress Variable

As conducted above with the job stress variable, overall stress was regressed in three steps; the first two steps served as controls with the socio-demographic variables (age, ethnicity, gender, intent to stay, months employed, motivation to work, and time and permanency) and paired centered justice variables. Not surprisingly, the first step, including just

the socio-demographic variables, of all four models was significant, Hypothesis 4a: F_{inc} (12, 245) = 4.276, p <.001; R^2_{Δ} = .173; Hypothesis 4b: F_{inc} (12, 246) = 4.293, p <.001; R^2_{Δ} = .173; Hypothesis 4c: F_{inc} (12, 245) = 4.276, p <.001; R^2_{Δ} = .173; and 4d: F_{inc} (12, 2467) = 4.3293, p <.001; R^2_{Δ} = .173. In opposition to the hypothesized interactions, three of the four (distributive and interpersonal, distributive and informational, procedural and interpersonal) regression models indicated non-significant cross-product terms and non-significant third step changes in R^2.

Table 3.14 Third step of regression models investigating interactions on the BSI (H4a-H4c)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	$R^2\Delta$
H4a Distributive x Interpersonal (cross-product)	-.006	.007	-.048	-.047	.931	.002
H4b Distributive x Informational (cross-product)	-.006	.007	-.051	-.048	.895	.001
H4c Procedural x Interpersonal (cross-product)	-.003	.011	-.017	-.016	.886	.000
Note. The data represents the third step for four different regression models for the BSI * p <.05 ** p < .001						

However, as with the job stress variable, the interaction between procedural justice and informational justice was supported (see Table 19). In the model, the second step, including the main effect controls, was not significant, F_{Δ} (2, 244) = .728, *ns*; R^2_{Δ} = .005; however, the third step indicated the interaction was significant, F_{Δ} (1, 243) = 4.810, p <.05; R^2_{Δ} = .016.

Table 3.15 Regression analysis investigating the interaction of procedural and informational justice on BSI (H4d)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	
Step 1						
Months Employed	.000	.000	-.068	-.054	.639	
Age	-.001	.001	-.059	-.044	.566	R^2 = .173**
Intent to Stay	.001	.004	.019	.014	.579	Adjusted
Ethnicity[a]	.065	.029	.238*	.131	.304	R^2 = .133
Ethnicity[b]	.035	.024	.113	.084	.559	R = .416**
Ethnicity[c]	.076	.030	.326*	.147	.202	
Ethnicity[d]	.067	.026	.335*	.147	.193	
Full Time Temporary	-.008	.018	-.040	-.026	.431	
Full Time Permanent	.014	.020	.054	.041	.577	
Part Time Permanent	.042	.020	.161*	.124	.587	
Motivation to Work	-.013	.005	-.179*	-.161	.808	
Gender	.046	.013	.220**	.209	.906	
Step 2						
Months Employed	.000	.000	-.075	-.060	.632	
Age	-.001	.001	-.067	-.050	.558	
Intent to Stay	.002	.004	.036	.027	.556	
Ethnicity[a]	.067	.029	.243*	.134	.301	
Ethnicity[b]	.037	.025	.117	.087	.552	R^2 = .178
Ethnicity[c]	.075	.030	.323*	.145	.202	Adjusted
Ethnicity[d]	.068	.026	.344*	.151	.193	R^2 = .131
Full Time Temporary	-.007	.018	-.033	-.021	.429	R = .422
Full Time Permanent	.017	.020	.066	.050	.566	$R^2\Delta$ = .005
Part Time Permanent	.042	.020	.165*	.126	.586	
Motivation to Work	-.013	.005	-.171*	-.152	.791	
Gender	.047	.013	.222**	.211	.905	
Procedural (centered)	-.012	.011	-.083	-.067	.655	
Informational (centered)	.002	.009	.018	.015	.694	

Table 3.15- *Continued*

Step 3						
Months Employed	.000	.000	-.081	-.053	.558	R^2 = .194*
Age	-.001	.001	-.071	.036	.553	Adjusted
Intent to Stay	.002	.004	.049	.106	.289	R^2 = .144
Ethnicity[a]	.054	.029	.197	.097	.549	R = .440*
Ethnicity[b]	.041	.025	.131	.129	.199	$R^2\Delta$ = .016*
Ethnicity[c]	.067	.030	.289*	.143	.192	
Ethnicity[d]	.065	.026	.327*	-.035	.424	
Full Time Temporary	-.011	.018	-.053	.047	.565	
Full Time Permanent	.016	.020	.063	.115	.582	
Part Time Permanent	.039	.019	.150*	-.150	.791	
Motivation to Work	-.013	.005	-.168*	.219	.902	
Gender	.049	.013	.231**	-.082	.646	
Procedural (centered)	-.015	.011	-.102	.000	.685	
Informational (centered)	.000	.009	.000	-.126	.856	
P x Im (cross-product)	-.023	.011	-.137*	-.065	.631	

Note. [a] Asian; [b] African American/Black; [c] Caucasian/White; [d] Hispanic/Latino; reference group = multi-racial.
* p <.05 ** p < .001

Again, the predicted general stress (BSI) scores were plotted for a respondent scoring one standard deviation above and below the means of procedural and informational justice in order to assess the nature of the observed interaction (Cohen & Cohen, 1983; see Figure 3.3). The interactions between procedural and informational justices for both job stress and general stress lend support for Hypothesis 4d; Hypotheses 4a through 4c were left unsupported.

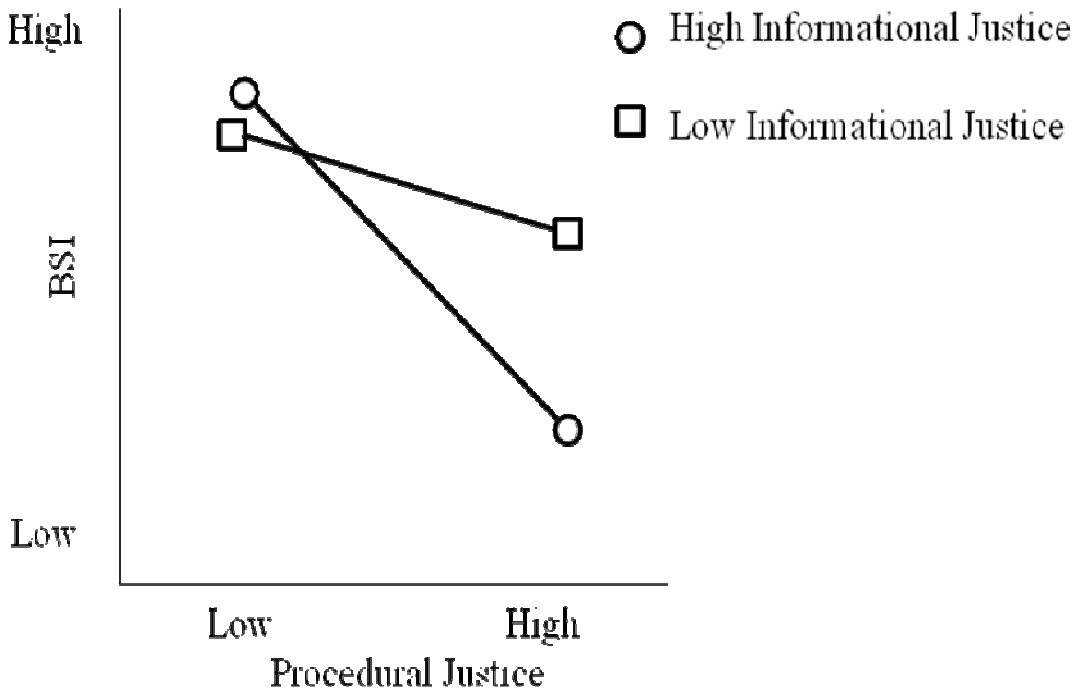

Figure 3.3 Interactive effect of procedural justice and informational justice on BSI.

3.2.4 Hypothesis 5

3.2.4.1 Job Stress Variable

As a last test of interactional effects, two more sequential regression models were computed on the job stress variable. For Hypothesis 5a, the three-way interaction among procedural, distributive, and interpersonal justice was assessed. Similar to prior analyses, step one included the appropriate socio-demographic variables (hours worked, months employed, cohesion with future plans, and time and permanency) and was significant, F_{inc} (10, 247) = 3.306, p<.001. The second step included the main effects of distributive justice, procedural justice, and interpersonal justice and was also significant, F_{Δ} (3, 244) = 4.337, p<.01, R^2_{Δ} = .045. For step three, the three interaction terms were entered into the equation; however, the change in R^2 was not significant, F_{Δ} (3, 241) = .658, *ns*, R^2_{Δ} = .007. Lastly, in step four, testing the three-

way interaction, was also non-significant, F_{Δ} (1, 240) = .067, *ns.* Once again, the interpersonal variable was the only significant unique predictor among the justice variables and accounted for 2% of variance in the final model (see Table 3.16). Thus, Hypothesis 5a, predicting a three-way interaction between distributive, procedural, and interpersonal justices was not supported.

Table 3.16 Fourth step regression models investigating interactions on job stress (H5a-H5b)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	$R^2\Delta$
H5a Distributive x Procedural x Interpersonal (cross-product)	.003	.011	.082	.015	.035	.000
H5b Distributive x Procedural x Informational (cross-product)	-.002	.009	-.017	-.012	.464	.000
Note. The data represents the fourth step for two different regression models for job stress * p <.05 ** p < .001						

Hypothesis 5b was tested in the same manner as 5a, except that the informational justice variable was used in place of the interpersonal variable. The first step included the socio-demographic variables (hours worked, months employed, cohesion with future plans, and time and permanency) and was again significant, F_{inc} (10, 248) = 3.319, p<.001, R^2_{Δ} = .118*.* The second step included the main effect variables (i.e., distributive, procedural, and interpersonal) and was also significant, F_{Δ} (3, 245) = 5.674, p<.001, R^2_{Δ} = .057. The third step, including the two-way interaction terms was significant F_{Δ} (3, 242) = 2.969, p<.001, R^2_{Δ} = .029. Similar to the analyses on the previous hypothesis, the interaction between informational and procedural justice was significant and accounted for 2% of the total job stress variable. In the final step, the three-way interaction was entered into the model and was non-significant F_{Δ} (1, 241) = .042, *ns,* R^2_{Δ} = .000 (see Table 20)*.* Once again, contrary to the expected results, the three-way cross-

product term was not significant, thus indicating a lack of support for the interaction as hypothesized.

3.2.4.2 BSI Stress Variable

The last two analyses were conducted in order to test the three-way interaction on the overall stress variable. For Hypothesis 5a, the first step of the model (including age, ethnicity, gender, intent to stay, months employed, motivation to work, and time and permanency) was the only significant step, F_{inc} (12, 245) = 4.276, p <.001; R^2_{Δ} = .173. The remaining steps including the controls for the main effects and two-way interactions, as well as a test of the three-way cross-product were all non-significant, leaving Hypothesis 5a unsupported.

Table 3.17 Fourth step regression models investigating interactions on BSI (H5a-H5b)

Variable	*B*	*SE B*	B	Part Correlations	Tolerance	$R^2\Delta$
H5a Distributive x Procedural x Interpersonal (cross-product)	.007	.011	.197	.036	.034	.001
H5b Distributive x Procedural x Informational (cross-product)	.004	.009	.041	.028	.472	.001
Note. The data represents the fourth step for two different regression models for BSI * p <.05 ** p < .001						

In the regression analyses for Hypothesis 5b, the results were very similar. The first step was the only significant step in the model, F_{inc} (12, 246) = 4.293, p <.001; R^2_{Δ} = .173. The remaining steps, including the test of the three-way interaction as hypothesized in 5a were not significant.

CHAPTER 4

DISCUSSION

4.1 Overview

The present study attempted to extend the justice-stress literature in three main ways. First, this study further evaluated the merits of the four-factor model of justice as proposed by Colquitt (2001). Second, this study made an effort to add to the limited research on the relationships among each of the four justice variables (distributive, procedural, interpersonal, and informational) and perceived stress. Lastly, this study empirically tested the direct relationships of the proposed JSH model by examining hypothesized interactions suggested by the primary and secondary appraisal method (Greenberg, 2004; Lazarus & Folkman, 1984).

This study assessed organizational justice using Colquitt's (2001) scale and measured perceived stress utilizing two scales: Job Stress Scale (Parker & Decotis, 1983) and the BSI (Derogatis & Melisaratos, 1983). In doing so, the study hypothesized main effects and interactions between the four justice variables, such that there would be more stress if two or more justice dimensions were low (Greenberg, 2004). On the whole, the results of this study did not support the hypothesized results. The regression models suggested the predictive ability of each of the justice variables when each was entered into the model independently. However, when the justice variables were entered into the model with other justice variables, only two of the variables, interpersonal justice and informational justice, accounted for unique variance in perceived stress. Additionally, analysis on the interactions of the justice variables provided a lack of support for the Justice Salience Hierarchy (JSH) as proposed by Greenberg (2004). Although the confirmatory factor analysis did confirm a better fit of the four-factor model, the regression analyses suggest that the justice variables might be too highly correlated to

individually predict a significant amount of variance, at least for the dependent variable of stress.

As indicated by the confirmatory factor analysis, the four-factor model of justice, which includes distributive, procedural, interpersonal, and informational, provided a better fit to the data than either the three-, the two-, or the one-factor model. These findings lend support for the first hypothesis that the four-factor model provides the best fit. While the fit indices did not necessarily indicate a "good fit" as suggested by Hu and Bentler (1999) and Browne and Cudeck (1993), following Judge and Colquitt (2004), the four-factor model provided a reasonable fit. Further, it was a far better fit than the three-factor model that is most commonly used today. In fact, the indices of fit were very similar to past studies using Colquitt's measure (2001), as well as other similar measures of organizational justice (Judge & Colquitt, 2004; Tepper, 2001). In combination with these other findings, the results of this study suggest strong support for the four factors of organizational justice.

As a cautionary argument, while the confirmatory factor analysis can provide guidance to understanding the dimensions, it should also be noted that fit statistics tend to identify more complex factor structures as having a better fit, even when correlations among the factors are high (Colquitt & Shaw, 2005). With that being said, the analyses for the final four hypotheses highlight this apparent confound.

As noted, Hypotheses Two through Five were not supported in full. Partial support was demonstrated for Hypothesis Two and Hypothesis 4d; however, no support was demonstrated for the remaining hypotheses. All four of these hypotheses were specifically designed to assess the JSH as suggested by Greenberg (2004). While other studies have found main effects for the justice variables, as well as interactions, the present study was mixed in support. For example, in testing Hypothesis Two, the regression analyses that encompassed all four variables indicated that the justice variables did not account for a unique amount of variance independent of one another. It is largely possible, due to their high inter-correlations, that the variables

shared much of the variance of stress. Thus, when all the variables were placed in the same model, their associations prevented any of the variables from predicting variance that was not simultaneously attributable to another form of justice.

Therefore, to further assess the hypothesis that the variables would predict stress in a negative direction, separate regression analyses were conducted. This additional analysis did support the notion that all of the four organizational justice variables (i.e., distributive, procedural, informational, and interpersonal) predicted job stress in a negative direction. Thus, when any of these justices decrease, job stress increases. However, none of the justice variables were significant predictors of general stress as measured by the BSI. While computing these individual regression models does not capture unique variance, it provides at least some discussion with regard to the justice-stress relationship.

Non-support for all the remaining hypotheses except 4d came as a surprise given the findings of past interactions between various justice variables (Elovainio et al., 2001; Greenberg, 2006; Janssen, 2004; Tepper, 2004). The interaction of procedural justice and informational justice was supported. Through interpretation, this interaction occurs such that when procedural justice is low, informational justice does not demonstrate additive effects on stress; stress is already high and informational justice does not appear to increase or decrease stress. However, when procedural justice is high, there are significant differences on job stress between low and high interpersonal justice. As expected, when informational justice is high, there is less stress than when informational justice is low. This same relationship was found for both job stress and general stress as measured by the BSI. This lends some support for the interactions between justice variables suggested in the JSH.

Further, in all four regression equations for Hypotheses Four, interpersonal and informational justices emerged as significantly important variables. As an expected prediction, the relationships were in the negative direction, indicating that the less interpersonal justice (lack of respect, support, etc.) and less informational justice (lack of information), the more

perceived stress the participants reported. While most of the expected interactions were not significant, it should be noted that interpersonal and informational justice were consistently the only justice variables that remained significant predictors when paired with another justice variable. Not surprisingly, it seems as though the supervisory relationship has a large effect on the amount of stress one feels on the job. Unfortunately, this finding is only one of the many that were predicted and, overall, the study suggests a lack of support for the JSH as proposed by Greenberg (2004).

4.2 Limitations

As mentioned, the high correlations among the justice variables are a potential problem for finding significant individual justice predictors. This concept is not novel to the study of organizational justice; as highlighted by Colquitt and Shaw (2005), the concern of highly correlated dimensions is a debated issue. Past scholars have expressed concerns for high correlations between distributive and procedural justice (Sweeney & McFarlin, 1997). Similarly, the analysis in Colquitt's (2001) paper that supports the four-factor model also demonstrates high correlations between the procedural and informational, informational and interpersonal, and procedural and distributive justice variables. How can these variables be distinct and yet be so highly correlated? As mentioned in the review of the literature, this questions remains up for debate. For instance, many argue that informational and interpersonal justices are inherently related (i.e., interactional justice; Bies, 2005; Moorman, 1991). On the other hand, few would dispute the procedural and distributive distinction in the justice literature (Colquitt & Shaw, 2005). In argument for the separate dimensions, scholars such as Colquitt and Shaw argue that these correlations are no different than other highly correlated dimensions commonly used in organizational literature such as organizational commitment (Meyer & Allen, 1990). In the current study, it could be these high correlations that led to the lack of unique predictive results.

Other than the highly correlated variables discussed above, there are other possible reasons to explain the lack of findings. For example, the current study was comprised of a

different population from those who have previously demonstrated interaction effects of justice variables on stress. This study was conducted on a sample of working students, as opposed to samples obtained from actual businesses. While the inherent variability in this sample is actually a strength of the project, it could explain why the present study's results were not similar to those conducted in organizational samples (Judge & Colquitt, 2004; Elovainio et al., 2001; Greenberg, 2006; Janssen, 2004; Tepper, 2004). Even though efforts were made to control for the variability in job characteristics across participants, the sample did not reflect a sample from one single organization. It should be noted that a variety of data set inclusion criteria, besides length of employment of at least six months, were assessed and analyzed. Data set inclusion criteria, such as hours worked per week, motivation to work, and job permanency, were examined and the full analyses were conducted on each. However, all attempts of minimizing error due to the variability of job characteristics demonstrated similar results as those results reported above. The inherent variability within the sample was unavoidable and it was likely that every participant was answering the survey questions with regard to a different organization, different compensation, different work load, and different supervisory support.

Further, another probabilistic attribute of the sample is that the participants are all working while going to school. Ironically, this duality of commitments was not reflected in the stress measures, as they were both positively skewed with relatively low means; however, the mere fact that all the participants are still in school could affect their justice perceptions. In fact, 168 participants indicated that their current place of employment was not permanent. It could be the case that a lack of expectations of long-term commitment to an organization biases one's perceptions of justice in one way or another.

Another limitation in this research that could have affected the results is the measurement and occurrence of stress. Great efforts were made in order to find a stress scale that would accurately capture the perceived stress that participants might have been feeling. These efforts led to the Job Stress Scale (Parker & Decotis, 1983) and the BSI (Derogatis &

Melisaratos, 1983), both previously used in similar studies. The fact that both scale distributions of the stress variables were positively skewed with low mean scores are indicative of range restriction and could be another reason for the non-significant findings. Past studies using the same scales however, have not demonstrated skewed distributions; thus, while the measurability of the scales should not be ruled out as a possible limitation, other explanations are more likely. First, a potential reason for the stress skewness could be the result of the time in the semester the survey was administered. That is, a large proportion of participants completed the survey early in the semester, which is traditionally a less stressful time for many students. However, analyses were conducted to determine any relationship between the time in the semester a participant took the survey and the study variables; no significant relationships were discovered. Therefore, it is unlikely that time in the semester a participant took the survey was a limitation. A second explanation is that stress and the symptoms of stress are not socially desirable events to record. Consequently, either a conscious or unconscious desire to appear less stressed could have affected the stress scales. Lastly, it is also possible that students are simply not as aware of the manifestations of stress. Perhaps the expression of stress on a younger body is not as apparent, or perhaps younger people are not as in-tune with their bodies as older individuals. In either case, the student population used in this sample could, once again, be problematic in measuring stress.

Other limitations of this study include shared method bias, on-line survey methodology and generalizability. Briefly, shared method bias is a possible limitation because both justice and stress measures were assessed at the same time. Traditionally, shared method bias tends to inflate significant results; however, it can also reduce the probability of detecting interactions (Wall, Jackson, Mullarkey & Parker, 1996). Therefore, in this case, the shared method bias limitation could be indicative of the lack of support for the JSH.

Secondly, survey methodology in and of itself, comes with limitations such as self-report, and there are very few ways to assess the relationships proposed in the current study.

The only way to circumvent self-report is to ask co-workers and family members to complete reports, and that was not an option for the current study.

Finally, generalizability remains a limitation for most research, especially those studies conducted on student samples. In this case, the lack of support for the JSH should be interpreted lightly due to the generalizability of a student sample. One might argue that incorporating a larger variety of occupations and employment situations might help the generalizability of these findings; such is not the case for this study due to the limitations reflected above.

Overall, the current study suggests a lack of support for an organizational justice to stress relationship, and further the JSH. On the other hand, the individual regression models of stress on the individual justice variables did indicate there is some type of negative relationship, such that stress increases when justice decreases. Further, as mentioned above, interpersonal and informational justice surfaced as the most important justice variables in predicting stress. Despite the studies limitations, this finding has some implications for organizations, especially for leaders.

4.3 Implications

Theoretically, the present study implies a lack of support for the JSH; however, readers should use caution when interpreting the lack of support for the JSH due to the sample issues discussed above. To more confidently evaluate the JSH, more research assessing these relationships, particularly the interactions among the justice variables, is needed in order to draw any noteworthy theoretical implications.

On the other hand, the current study does lend itself to practical implications. The results of this study show that interpersonal justice is a powerful perception many employees can internalize and manifest into stress. Interestingly, interpersonal and informational justice, or their superordinate dimension, interactional justice in some cases, has not been fully distinguished from supervisory support (J. Greenberg, personal communication, April 11, 2008).

It remains unclear whether there is a difference between the perceived justice and the perceived support. Nonetheless, a commonality is that a supervisor's support can have a large impact on his or her employees. Thus, for organizations, this implies the importance of training and encouraging supervisors in these types of perceptions and behaviors that will increase perceived justice and/or support. As Greenberg (2006) demonstrated, training on interactional justice for nurse supervisors had an impact on perceptions of justice and stress, as measured by insomnia. Moreover, it is sometimes the case that distributive and procedural justice perceptions are difficult to change, either because of company policy, unions, or some other hurdle. The current study, as well as other justice literature, points to a justice perception that is more actionable for more companies. Not only should more research be conducted in assessing this relationship and distinguishing justice from support, but more importantly, future research should center on the types of trainings and interventions that will impact these perceptions as well.

4.4 Future Research

On the whole, there is a need to reevaluate the JSH model with a different sample and perhaps, with different measures of stress. Ideally, this type of study should be conducted on participants in a few organizations. Although the sample would be slightly more biased, this would allow for less error and more precise measurements of justice and stress. As past literature indicates, when using organizational samples, the relationships predicted by the JSH are demonstrated (Greenberg, 2006; Judge & Colquitt, 2004; Janssen, 2004; Tepper, 2001). Because past literature has not tested the JSH directly, it might be worthwhile to test in this type of sample before generalizing to a larger population. Further, an ideal sample would be from an organization that has just experienced a change, such as the one Greenberg (2006) assessed, in which the pay scale for nurses had changed. Greenberg was able to manipulate interactional training for nurse supervisors (some received the training and some did not) and assess

differences. Other experimental studies that manipulate the justice variables should be conducted in order to gain a more comprehensive knowledge base of organizational justice.

An additional advantage to gathering a sample from one organization is that other sources of information could be obtained, such as information from supervisors and peers. This type of information could help in comparing agreement among employees or assessing the social comparison aspects of the justice variables. For example, it would be interesting to observe participants' distributive justice perceptions in relation to their peers working in similarly paid positions.

Another potential future direction in order to address the stress measure limitations mentioned above would be to create a new measure of stress for the particular population used in this study. It was difficult to find a widely used measure of stress specifically for the workplace, which is why both scales were used in this study. In the future, it would be beneficial to have a more thorough work stress scale that caters more to the population in which it is used, in this case, students.

Other future research measuring possible moderators and mediators, such as workload, leader-member-exchange, and organizational commitment, would add to the justice-stress literature. Judge and Colquitt's (2001) study in which work-life balance was assessed was one of very few studies that assessed a justice-stress mediator. Therefore, other research should seek to better understand the potential moderators and mediators of the justice-stress relationship. Additionally, other variables, in which stress might moderate outcomes, should be assessed as well. In Janssen's (2004) study, innovative behavior was assessed as an outcome; again, it is one of very few studies that have assessed outputs related to justice and stress. While many studies have assessed the relationship between justice and outcomes such as organizational commitment, organizational citizenship behaviors, and counterproductive work behaviors, stress has not been included as a potential moderator or mediator variable (Cohen-

Charash & Spector, 2001; Colquitt et al., 2001). Thus, this area of study would be beneficial to the field as a whole.

4.5 Conclusion

The ramifications of stress are far-reaching as it negatively affects the individual as well as the organization. Investigating the antecedents of outcome variables related to stress is integral to understanding what individuals and organizations can do to reduce employee stress. Implicit within the JSH model are the implications that stress can be reduced by organizations, and especially by individual supervisors. While the current study lacks support for the JSH, other studies demonstrate justice interactions on perceived stress. The field of organizational justice and stress remains in the preliminary phases of truly understanding the intricate relationship. While research suggests a negative relationship between fairness and stress, this area of research is still too young to fully comprehend. To be sure, more research needs to be conducted in real organizations.

APPENDIX A

ORGANIZATIONAL JUSTICE MEASURE

Please indicate your answer to the proceeding questions using the following options:

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Procedural justice

The following items refer to the procedures used to arrive at your compensation level.

Indicate your agreement:

1. Have you been able to express your views and feelings during those procedures?
2. Have you had influence over the compensation level arrived at by those procedures?
3. Have those procedures been applied consistently?
4. Have those procedures been free of bias?
5. Have those procedures been based on accurate information?
6. Have you been able to appeal the compensation level arrived at by those procedures?
7. Have those procedures upheld ethical and moral standards?

Distributive justice

The following items refer to your compensation level.

Indicate your agreement:

1. Does your compensation level reflect the effort you have put into your work?
2. Is your compensation level appropriate for the work you have completed?
3. Does your compensation level reflect what you have contributed to the organization?
4. Is your compensation level justified, given your performance?

Interpersonal justice

The following items refer to the authority figure who enacted the procedure.

Indicate your agreement:

1. Has (he/she) treated you in a polite manner?

2. Has (he/she) treated you with dignity?

3. Has (he/she) treated you with respect?

4. Has (he/she) refrained from improper remarks or comments?

Informational justice

The following items refer to the authority figure who enacted the procedure.

Indicate your agreement:

1. Has (he/she) been candid in (his/her) communications with you?

2. Has (he/she) explained the procedures thoroughly?

3. Were (his/her) explanations regarding the procedures reasonable?

4. Has (he/she) communicated details in a timely manner?

5. Has (he/she) seemed to tailor (his/her) communications to individuals' specific needs?

APPENDIX B

JOB STRESS SCALE

In the past seven days, how much have the symptoms described below been bothering you?

Please indicate your answer using the following options:

[A] = Never

[B] = Somewhat uncommonly

[C] = Sometimes

[D] = Somewhat commonly

[E] = Always/Daily

1. I have felt fidgety or nervous as a result of my job

2. My job gets to me more than it should

3. There are lots of times when my job drives me right up the wall

4. Sometimes when I think about my job I get a tight feeling in my chest

5. I feel guilty when I take time off from my job

APPENDIX C

BRIEF SYMPTOM INVENTORY

In the past seven days, how much have the symptoms described below been bothering you?

Please indicate your answer using the following options:

[A] = Not at all

[B] = Not very much

[C] = Sometimes

[D] = very much

[E] = Extremely Bothersome

Anxiety

1. Nervousness or shakiness inside

4. Suddenly scared for no reason

7. Feeling Fearful

10. Feeling tense or keyed up

13. Spells of terror or panic

16. Feeling so restless you could not sit still

Somatization

2. Faintness or dizziness

5. Pains in heart or chest

8. Nausea or upset stomach

11. Trouble getting your breath

14. Hot or cold spells

17. Numbness or tingling in parts of your body

19. Feeling weak in parts of your body

Depression

3. Thought of ending your life

6. Feeling Lonely

9. Feeling blue

12. Feeling no interest in things

15. Feeling hopeless about the future

18. Feelings of worthlessness

20. Your feelings being easily hurt

APPENDIX D

DEMOGRAPHIC SURVEY

Please answer the following questions by marking one of the respective choices.

1. Which best describes you?

Male

Female

2. Please indicate your current enrollment status:

a- Freshman

b- Sophomore

c- Junior

d- Senior

e- Graduate/ Advanced Degree Student

f- Not currently enrolled in school

3. Please indicate your age (please report numbers only).

4. Please indicate the ethnicity that best describes you:

a- Asian (Origins in Far East, Asia, Japan, India, Philippines, Thailand, etc.)

b- African American/Black (Origins in Africa, Haiti, etc.)

c- Caucasian/White (Origins in Europe, North Africa, Middle East, etc)

d- Hispanic/Latino (Origins in Spanish Mexico, Puerto Rico, Cuba, Central/South America, etc)

e- multi-racial or other

5. I have been continuously working for my current employer for…

a) not currently working

b) less than 6 months

c) at least 6 months but less than a year

d) at least a year but less that 1 1/2 years

e) at least 1.5 years but less that 2 years

f) 2 years or more

6. On average, I work…

a) less than 5 hours a week

b) more than 5 but less than 15 hours a week

c) more than 15 but less than 25 hours a week

d) more than 25 but less than 35 hours a week

e) more than 35 but less than 45 hours a week

f) more than 45 hours a week

7. I currently work

a) one job at one company

b) two different jobs at different companies

c) three different jobs at different companies

d) four or more different jobs at different companies

8. Please indicate the industry in which you are primarily employed.

a- Restaurant/Retail

b- Sales/Marketing

c- Technical/Manufacturing/Engineering

d- Medical/Healthcare

e- Education/Government/Non-Profit

f- Financial/Legal

g- Consulting/Professional

h- Other

i- not currently employed

9. Please indicate the total number of months employed you have been employed in your current organization (please report numbers only).

10. Please indicate the total number of hours you currently work for your organization per week (please report numbers only).

11. I intend to stay employed with my current company for the next...

a- Few weeks but less than 6 months

b- More than 6 months but less than a year

c- More than 1 year but less than 2 years

d- More than 2 years but less than 3 years

e- More than 3 years but less than 4 years

f- More than 4 years but less than 5 years

g- More than 5 years but less than 10 years

h- More than 10 years

12. I consider my current employment to be…

a- Full time and temporary

b- Full time and permanent

c- Part time and permanent

d- Part time and temporary

13. On a scale of 1 to 5, I consider my job…

1- Only as something I do to pay the bills

3- As something more than paying bills

5- as something much more than paying bills

14. On a scale of 1 to 5, I am currently employed

1- Only to pay the bills

3- To pay the bills and as an investment in my career

5- Only for the purposes of an investment in my career

15. I consider my current employment…

a- A stepping stone to permanent employment with the same company

b- A stepping stone to permanent employment with a different company but in the same field

c- A stepping stone to permanent employment with a different company and a different field

d- To already be my permanent employment

e- A stepping stone to temporary employment with a different company but in the same field

f- A stepping stone to temporary employment with a different company and a different field

16. I am paid…

a- hourly plus tips

b- hourly

c- salary plus commission

d- salary

17. Please indicate your hourly wage:

a- $2.50 or less

b between $2.51 and $5.00

c- between $5.00 and $6.00

d- between $6.01 and $8.00

e- between $8.01 and $10.00

f- between $10.01 and $12.00

g- between $12.01 and $14.00

h- between $14.01 and $16.00

i- more than $16.01

j- not paid by hourly wage

18. Please indicate your annual salary:

a- less than 15,000

b- between 15,001 and 25,000

c- between 25,001 and 35,000

d- between 35,001 and 45,000

e- between 45,001 and 55,000

f- between 55,001 and 65,000

g- between 65,001 and 75,000

h- 75,001 or more

i- not paid by salary

19. Which group do you most compare yourself with when assessing the fairness of your pay and fringe benefits?

a- full time workers in the organization

b- part-time workers in this organization

c- full time workers in other organizations

d- part-time workers in other organizations

20. I would classify the type of my job as:

a- skilled or unskilled labor

b- professional, technical, or sales

c- clerical

d- managerial

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