TRUST IN TYPICAL AND HIGH-RELIABILITY CONTEXTS:
BUILDING AND REACTING TO TRUST AMONG
 FIREFIGHTERS

JASON A. COLQUITT
University of Georgia

JEFFERY A. LEPINE
Arizona State University

CINDY P. ZAPATA
Georgia Institute of Technology

R. ERIC WILD
Alligator Properties, LLC

We develop theory that distinguishes trust among employees in typical task contexts (marked by low levels of situational unpredictability and danger) from trust in “high-reliability” task contexts (those marked by high levels of situational unpredictability and danger). A study of firefighters showed that trust in high-reliability task contexts was based on coworkers’ integrity, whereas trust in typical task contexts was also based on benevolence and identification. Trust in high-reliability contexts predicted physical symptoms, whereas trust in typical contexts predicted withdrawal. Job demands moderated linkages with performance; trust in high-reliability task contexts was a more positive predictor of performance when unpredictable and dangerous calls were more frequent.

Trust among employees is vital in virtually any job in which employees must depend on their coworkers to fulfill their job duties. When employees are able to trust coworkers, they are free to focus their attention on the task at hand (Mayer & Gavin, 2005). When employees are unable to trust coworkers, efforts must instead be focused on monitoring and self-protective behaviors (Mayer & Gavin, 2005). Because such behaviors constitute “off-task” allocation of cognitive and attentional resources, task performance is hindered (Kanfer & Ackerman, 1989). In addition, elevated monitoring, “backing up,” or self-protection behaviors contribute to increased workload, which is a stressor that can increase strain (Lazarus & Folkman, 1984; Spector & Jex, 1998). Thus, given the role that trust plays in both task accomplishment and personal well-being, it is not surprising that it is an important and popular topic in the management literature.

Despite the widespread interest in trust, many questions remain unexplored by trust scholars. Among these is an interesting and important theoretical puzzle involving the role that task context plays in the development and operation of trust. Gabarro (1978) suggested that as work relationships mature, trust becomes quite differentiated, with trust in one area being distinguished from trust in another. Along the same lines, Baier suggested that the question “Whom do you trust?” must be supplemented by the question “What do you trust to them?” (1986: 236; emphasis in original). Similarly, Mayer, Davis, and Schoorman argued that “the question ‘Do you trust them?’ must be qualified: ‘Trust them to do what?’” (1995: 729).

Unfortunately, theory and research on trust has remained focused on the causes and consequences of overall assessments of how much employees trust their coworkers or leaders (Brockner, Siegel, Daly, Tyler, & Martin, 1997; Cook & Wall, 1980; Mayer & Davis, 1999; Roberts & O’Reilly, 1974). As a consequence, researchers’ accounts of differentiated trust perceptions have been limited to suggestions that they are ubiquitous and fundamental to.
the trust phenomenon. In a general sense, the purpose of our research is to address this important theoretical gap. Specifically, we seek to develop and test theory that explains how differentiated perceptions of trust develop as a function of the task contexts that mark individuals’ jobs.

We argue that this “Trust them to do what?” question is vitally important not just because it represents a fundamental gap in theoretical understanding, but also because it has great practical significance in a number of jobs. Extreme variation in task contexts characterizes many jobs today, and performance in these jobs can have immediate and profound implications for employees, organizations, and key stakeholders. Indeed, jobs such as firefighting, police work, military work, commercial fishing, and oil drilling possess an intriguing duality. On the one hand, the typical workday in these jobs is spent doing somewhat benign tasks that support the organization’s technical core in a predictable context. Such tasks may include a mix of planning, updating, preparing, and maintenance duties, all of which help support task accomplishment. On the other hand, the rhythm in these jobs is occasionally punctuated by more dangerous tasks related to the technical core that occur in an inherently more complex and unpredictable context. These tasks include elements of what have come to be called high-reliability work contexts, contexts in which the capacity to effectively manage fluctuating and hazardous working conditions is vital (Bigley & Roberts, 2001; Weick, Sutcliffe, & Obstfeld, 1999). Because the variation in interpersonal vulnerabilities across typical and high-reliability contexts may have important implications for employee effectiveness and well-being (e.g., Weick et al., 1999), a more specific purpose of our study is to develop and test theory regarding the etiology and consequences of trust in typical and high-reliability contexts.

Although there is no consensus in the literature on the exact set of characteristics that can be used to classify an organization, job, or set of tasks as “high reliability,” two key elements are situational unpredictability and situational danger (Bigley & Roberts, 2001; Weick et al., 1999). With respect to situational unpredictability, work in these contexts is often managed using highly structured practices that are intended to reinforce reliable performance, even in unpredictable conditions. These practices include routines, standard operating procedures, rules and regulations, checklists, cross-checks, and system redundancies (Weick, 1987). With respect to situational danger, the importance of high reliability becomes paramount when the core production tasks or the outcomes of those tasks are inherently hazardous or dangerous (Bigley & Roberts, 2001; Weick et al., 1999). This is because failures by individuals to perform reliably in their roles can be catastrophic given the stakes involved, a situation that exposes individuals to higher levels of vulnerability in high-reliability task contexts.

In the present research, we examine these important issues in the context of firefighting. The emergency response function of firefighters possesses many of the qualities that mark high-reliability work (Bigley & Roberts, 2001; Myers, 2005; Scott & Myers, 2005). For example, firefighters rely on both continuous training and a culture of reliability to reduce errors when responding to events marked by situational unpredictability and danger, but they also go beyond this training by using constrained improvisation and unplanned and unfamiliar sequences of actions to achieve successful outcomes (Bigley & Roberts, 2001). However, fewer than 10 percent of the calls firefighters receive may call for emergency response (Scott & Myers, 2005), and these times stand in stark contrast to the time spent inside the firehouse engaging in more routine tasks, such as planning, education, training, and maintaining fitness. Our study examines how firefighters form psychologically distinct evaluations of trust in their coworkers, distinguishing between trust referenced to typical day-to-day tasks and trust referenced to more infrequent high-reliability circumstances, and how these different evaluations of trust, in turn, uniquely influence facets of firefighter performance and well-being.

LITERATURE REVIEW AND HYPOTHESES

Before describing the antecedents and consequences of trust among firefighters, it is important to define what we mean by “trust.” Rousseau, Sitkin, Burt, and Camerer defined trust as a “psychological state comprising the intention to accept vulnerability based upon a positive expectation of the intentions or behavior of another” (1998: 395; see also Mayer et al., 1995). Although that definition was meant to be integrative, the trust literature has two distinct streams. One stream of research, exemplified by Mayer and colleagues’ (1995) model, emphasizes the vulnerability aspect of that definition; trust is viewed here as a unitary construct reflecting a willingness to be vulnerable. That willingness is driven by three facets of “trustworthiness”: ability, integrity, and benevolence. Ability and integrity capture rational reasons to trust rooted in past success and consistency between words, deeds, and values. In contrast, benevolence reflects a more emotional reason to trust rooted in past instances of caring and concern.
The other literature stream emphasizes the expectations aspect of Rousseau et al.’s (1998) definition. Here trust is viewed as confident, positive expectations (Cook & Wall, 1980; Lewicki & Bunker, 1995; McAllister, 1995; McAllister, Lewicki, & Charturvedi, 2006; Roberts & O’Reilly, 1974; Shapiro, Sheppard, & Cherskin, 1992). Although earlier measures sampled those expectations narrowly, in a unidimensional way (Cook & Wall, 1980; Roberts & O’Reilly, 1974), subsequent formulations have identified multiple dimensions on which confidence can be assessed. Those dimensions include knowledge- or cognition-based trust, goodwill- or affect-based trust, and identification-based trust (Lewicki & Bunker, 1995; McAllister, 1995; McAllister et al., 2006; Shapiro et al., 1992). Knowledge-based trust is rooted in past performance and promise keeping (Lewicki & Bunker, 1995; McAllister, 1995; McAllister et al., 2006; Shapiro et al., 1992). Goodwill-based trust is rooted in emotional investment and caring (McAllister, 1995; McAllister et al., 2006). Finally, identification-based trust is rooted in a sense of shared values and fit (Lewicki & Bunker, 1995; McAllister et al., 2006; Shapiro et al., 1992).

We defined trust in our study as a unitary construct that is driven by perceptions of ability, integrity, and benevolence, following Mayer and colleagues (1995). We chose the unitary form because we felt that it was better suited to capturing the distinctions that exist in firefighter jobs in which, for example, a firefighter may trust his or her company to learn about fire protection systems but not to rescue civilians from a fire. This example illustrates a firefighter who is drawing a distinction between trust referenced to typical tasks and trust referenced to high-reliability tasks. In contrast, we felt that the typical versus high-reliability distinction made less sense with multiple trust types. For example, it is difficult to envision a firefighter who feels more emotional investment from, or more shared values with, his or her company in reference to fire protection systems than civilian rescues. That example would illustrate differences in goodwill and identification-based trust across task contexts.

Although we did not conceptualize trust as multidimensional in our study, we did assess the multidimensional confident, positive expectations that have been the focus of theorizing by, among others, McAllister (1995), Lewicki and Bunker (1995), and Shapiro and colleagues (1992). By including ability and integrity as antecedents of trust, we sampled the same construct content that is found in operationalizations of knowledge- or cognition-based trust (Lewicki & Bunker, 1995; McAllister et al., 2006; McAllister, 1995; Shapiro et al., 1992). By including benevolece as an antecedent of trust, we sampled the same construct content that is found in operationalizations of goodwill- or affect-based trust (McAllister, 1995; McAllister et al., 2006). In addition, we included identification as an antecedent of trust, in an effort to sample the same construct content that is found in operationalizations of identification-based trust (Lewicki & Bunker, 1995; McAllister et al., 2006; Shapiro et al., 1992). We also felt that the identification concept was important to capture in our firefighting context because qualitative examinations of work on identification have highlighted the importance of identity issues (Myers, 2005; Scott & Myers, 2005). Although we included such content in our study, we adopted Mayer and colleagues’ (1995) structure by not calling those expectations “trust.” Instead, we conceptualized them as antecedents of trust.

**Antecedents of Trust among Firefighters**

The discussion above highlights the idea that trust can be rooted in both cognitive and affective sources. On the cognitive side, Mayer and colleagues (1995) emphasized the importance of ability and integrity. Similarly, McAllister and colleagues’ (2006) discussion of knowledge-based trust emphasized the importance of reliability, met expectations, and promise keeping (see also Lewicki & Bunker, 1995; McAllister, 1995; Shapiro et al., 1992). On the affective side, Mayer and colleagues (1995) emphasized the importance of benevolence. Similarly, McAllister and colleagues’ (2006) discussion of goodwill-based trust emphasized the importance of caring, concern, and liking on the part of trustees (see also McAllister, 1995). Identification-based trust also has a more affective character than trust rooted in ability or integrity. Tajfel (1978) described identification as that part of an individual’s self-concept that derives from his/her membership in a social group, together with the value and emotional significance attached to that membership. Ashforth, Harrison, and Corley’s (2008) narrative review emphasized those same elements, noting that identification conveys an emotional investment in the awareness of membership in a group and the sense that the group has value. As McAllister et al. (2006) observed, identification-based trust has an intimate and relational quality that suggests a strongly affective quality.

One question we examine in our study is how the more cognitive sources of trust (i.e., ability and integrity) and the more affective sources of trust (i.e., benevolence and identification) differentially predict trust in typical and high-reliability task
concerns. To address this question, we draw from and extend theories of judgment and decision making to propose that trust in high-reliability task contexts is more dependent on the more cognitive sources and less dependent on the more affective sources, and that trust in typical tasks is more dependent on the more affective sources and less dependent on the more cognitive sources. We argue that trust can be viewed as an outcome of a judgment and decision-making process (e.g., Highhouse, 2001; Lord & Maher, 1991), with trust decisions dependent on how individuals weigh cues associated with ability, integrity, benevolence, and identification. Judgment and decision-making research has shown that humans use simplifying heuristics and cognitive shortcuts to make decisions, the nature of which depends on the context (Highhouse, 2001; Lord & Maher, 1991). To understand how people process trust-relevant information in different contexts, we draw from theory and research on fluency, a meta-cognitive concept defined most basically as the ease or difficulty with which information can be processed (Alter, Oppenheimer, Epley, & Eyre, 2007).

The degree of fluency in a situation influences the information processing used in the search for and weighting of cues (Alter et al., 2007). Decision makers experience fluency when they are confronted with tasks or stimuli that are familiar, expected, and predictable. In those circumstances, information processing is superficial, with the cues that require the least amount of cognitive effort being relied upon (Hastie & Park, 1986; Zajonc, 1980). Here decision makers focus on affective cues that are associated with “gut feelings” and “intuitions.” Such theorizing is consistent with the “how do I feel about it?” heuristic whereby affect triggers a halo that overwhelms the influence of cognitive information (e.g., Schwarz & Clore, 1988). Decision makers experience “disfluency” (Alter et al., 2007) when they are confronted with tasks or stimuli that are unfamiliar, unexpected, and unpredictable. In those circumstances, information processing is more thoughtful and controlled (Kahne-man & Tversky, 1973); a wider variety of cues is sought and a more elaborate weighting scheme is used.

Because trust in typical tasks is associated with stimuli that are routine, familiar, and predictable, we argue that it is based on a fluent process. That fluency should result in a more automatic mode of processing and an increased consideration of affective sources of trust, such as benevolence and identification. We do not mean to suggest that benevolence and identification do not constitute “good reasons” for trusting others, as caring motives and shared identity can be valid signals that trust is warranted (Lewicki & Bunker, 1995; Mayer et al., 1995; McAllister, 1995; McAllister et al., 2006; Shapiro et al., 1992). We are merely arguing that when noncomputational affective processes drive trust decisions, people give more weight to affective antecedents (Stephen & Pham, 2008). Of course, there may be circumstances in which even typical tasks are interrupted by unusual or unforeseen events. Still, because typical tasks have less salient immediate consequences for the truster, perceived vulnerability seems benign and a more automatic mode should still be the norm.

Because trust in high-reliability contexts is associated with stimuli that are unpredictable and dangerous, we argue that it is based on a process that is not fluent. That disfluency should result in a more controlled mode of processing and an increased emphasis on cognitive sources of trust, such as ability and integrity. Indeed, ability and integrity should have greater perceived ecological validity in high-reliability settings because both are relevant to demands inherent in these contexts. Trustees with higher levels of ability should possess the knowledge and recall needed to utilize the procedures, rules, and checklists used to govern those tasks, along with the capability to adapt quickly (LePine, 2005). Trustees with high levels of integrity should possess the dispositional consistency that becomes so valuable in high-reliability contexts. Indeed, “integrity” and “reliability” are often used interchangeably in the trust literature (Mayer et al., 1995). Of course, there may be circumstances in which high-reliability tasks are governed by rules, procedures, checklists, and system redundancies that lend an air of routine to them. Still, because the hazardous nature of high-reliability tasks should create such salient vulnerability, more controlled processing should be the norm.

**Hypothesis 1.** Trust referenced to typical tasks is more significantly related to more affective antecedents (benevolence and identification) than trust referenced to high-reliability tasks.

**Hypothesis 2.** Trust referenced to high-reliability tasks is more significantly related to more cognitive antecedents (ability and integrity) than trust referenced to typical tasks.

**Consequences of Trust among Firefighters**

Having described how trust in typical and high-reliability tasks may develop, we turn our attention to the consequences of those trust forms for firefighters. As noted at the outset, being able to trust one’s coworkers allows individuals to focus their
attention on job tasks. A lack of trust in reference to particular tasks, in contrast, should constitute a stressor. In their transactional model, Lazarus and Folkman (1984) argued that people use primary appraisals to categorize situations as positive, stressful, or irrelevant. They then use secondary appraisals to determine what can be done to cope with stressors that are encountered. In the case of distrust, that secondary appraisal might trigger actions with which the individuals attempt to minimize their dependence on and vulnerability to others (Mayer & Gavin, 2005). Thus, distrust is likely to lead to behaviors such as increased monitoring and surveillance. McAllister (1995) also suggested that distrust may lead individuals to behave defensively—to, for instance, exert extra effort to work around or avoid others.

The distractions created by distrust can consume valuable time and attention. According to resource allocation models, attentional effort is a cognitive resource of limited availability (Kanfer & Ackerman, 1989). To the degree that a task is resource-dependent, being able to focus on it tends to result in higher performance. Unfortunately, monitoring, surveillance, backing up, and working around behaviors constitute off-task allocations of resources. Such efforts also add to the resources that must already be allocated toward task accomplishment. These extra attentional demands increase an employee’s workload, where workload represents the sheer volume of work required of the employee (Spector & Jex, 1998). They also represent organizational constraints insofar as they prevent employees from translating ability or effort into performance (Spector & Jex, 1998).

The off-task attentional demands, increased workload, and constraints created by a lack of trust are likely to result in strain (Sonnentag & Frese, 2003). Strain is a general term for the reputed results of stressor exposure and can include psychological distress, physiological reactions, and behavioral effects (Sonnentag & Frese, 2003; Spector & Jex, 1998). In the current study, high levels of strain were operationalized as high levels of physical symptoms, high levels of withdrawal, and low levels of job performance. We chose these outcomes because they have clear practical implications in the workplace and have emerged as some of the more central operationalizations of strain in the stress literature. Some support for the strain-relevant consequences of distrust can be seen in a recent study by Mayer and Gavin (2005), which linked trust to employees’ ability to focus attention gained from a reduced need to develop contingency plans, watch out for themselves, and gather information for self-protection.

Given the dual nature of a firefighter’s job, it follows that both their typical tasks and high-reliability tasks require an ability to focus attention. Because of the higher frequency of typical tasks, a willingness to trust when performing those tasks has day-in and day-out benefits in reducing strain felt by firefighters. Moreover, because high-reliability tasks involve higher stakes, a willingness to trust when performing them reduces the pressure firefighters feel as they look ahead to the next emergency call. We therefore predicted relationships between both trust variables and physical symptoms, withdrawal, and job performance. Although we are not aware of a study linking trust to physical symptoms, past research has supported linkages between trust and both withdrawal and job performance (Colquitt, Scott, & LePine, 2007; Dirks & Ferrin, 2002).

**Hypothesis 3. Trust referenced to typical tasks and trust referenced to high-reliability tasks have unique relationships with (a) physical symptoms, (b) withdrawal, and (c) job performance.**

**Job Demands as a Moderator**

Although trust referenced to both typical and high-reliability tasks is predicted to influence strain-based outcomes, the importance of the trust variables may depend on the job demands being experienced. In their transactional model, Lazarus and Folkman (1984) further argued that the secondary appraisal process can result in a number of different coping strategies. Some of those strategies may focus on managing stressors in a proactive, behavioral way, and others may focus on dealing with or escaping the particular emotions and symptoms triggered by the stressors. Importantly, Lazarus and Folkman (1984) argued that the mechanics of secondary appraisals differ according to the demands of the surrounding situations.

The transactional model therefore suggests that the situational demands firefighters face may shape their reactions to trust referenced to both typical and high-reliability tasks (Lazarus & Folkman, 1984). To the degree that this occurs, firefighters may make decisions about vulnerabilities and expectations for particular tasks by specifically considering trust levels for those tasks. Interviews and observations regarding trust development reported by Gabarro suggested that this sort of situational appraisal may occur: “In the realities of running a business, the question seemed not to be how do I trust him, as it was in what areas and in what ways can I trust him” (1987: 279). Thus, the importance
of a particular trust variable may depend on how frequently that type of situational demand arises.

Mayer and colleagues’ (1995) integrative model of trust uses the concept of risk to capture differences in situational demands. For example, those authors suggested that the decision to be vulnerable on a given task depends on a comparison of the willingness to be vulnerable (trust) and the uncertainties and stakes present in a situation (perceived risk). When perceived risk is high, trust becomes a more impactful driver of job behaviors. For firefighters, high-reliability job demands should be associated with higher perceived risk. After all, perceptions of potential losses help determine how much risk is perceived, and few losses are more salient than the potential casualties in high-reliability contexts. The increased risk inherent in frequent high-reliability job demands should be factored into the secondary appraisal process (Lazarus & Folkman, 1984), focusing an individual on the most relevant form of trust in a given situation. That logic suggests that the effects of that form of trust are amplified, resulting in stronger relationships with the outcomes in our study.

Of course, a related question concerns what happens as high-reliability demands become less frequent. As the memory of the most recent emergency begins to fade, the secondary appraisal process should begin to center on the typical forms of trust that have now become more relevant. Given that the risks involved in typical tasks seem less extreme, one might be tempted to conclude that trust becomes a less significant driver of reactions in these contexts altogether. However, because the secondary appraisal includes a consideration of task demands, it follows that firefighters will perceive that a failure to plan out operations, a failure to study local maps, and a neglect of training and fitness duties will each create their own risks. We therefore suggest that the effects of trust in typical tasks become amplified when high-reliability demands become less frequent. In summary, we predict:

**Hypothesis 4.** High-reliability job demands moderate the relationships between trust referenced to typical tasks and (a) physical symptoms, (b) withdrawal, and (c) job performance: the relationships become less significant as high-reliability job demands increase in frequency and more significant as high-reliability job demands decrease in frequency.

**Hypothesis 5.** High-reliability job demands moderate the relationships between trust referenced to high-reliability tasks and (a) physical symptoms, (b) withdrawal, and (c) job performance: the relationships become more significant as high-reliability job demands increase in frequency and less significant as high-reliability job demands decrease in frequency.

### METHODS

**Sample**

The sample consisted of 126 employees of a fire department in southeastern U.S. city. The firefighters worked in 21 different work groups and seven different stations. These work groups, referred to as “companies,” averaged 5–6 firefighters in size. The firefighters averaged 39 years of age and 12 years of work in the city. The sample included 114 males and 12 females, with ethnicities as follows: 100 Caucasian, 16 African American, 5 Hispanic, and 2 Asian American. The sample consisted of 29 lieutenants, 33 drivers/ladder operators, and 64 firefighters, all of whom performed firefighting tasks and duties. Each firefighter worked a full 24-hour shift before being off for 48 hours.

**Procedures**

The first stage of data collection, which was necessary to develop our measures of trust in typical and high-reliability tasks, began with a lengthy meeting with the chief of the studied fire department. We sought to gain a better understanding of the tasks performed by the firefighters in his particular department. First, we asked the chief to identify the major dimensions of the firefighter job in the department. We explained that core job dimensions refer to major aspects of a job, and they consist of groups of more specific tasks that are generally performed together to accomplish a specific goal. The chief identified seven core dimensions: fire calls, auto accidents, prefire planning, training drills, education, physical fitness, and station maintenance.

Second, we asked the chief to help us identify the major tasks within each of those core dimensions. This step resulted in a set of 21 tasks that (as a set) comprised the firefighter job. As a check on the content validity of the tasks the chief identified, we compared his list with the firefighter information on the Occupational Information Network, or O*NET (see Peterson et al. [2001] for a review of the development and reliability of those data). The core tasks listed in O*Net for “Municipal Fire Fighters” (coded 33-2011.01) differ somewhat from the chief’s list in the labels used to describe tasks and the breadth of the activities the labels imply. Despite those differences, there was almost complete overlap of task content.
Third, after listing the specific tasks, we asked the chief to rate the importance, unpredictability, and danger involved in each of the tasks. The chief's ratings suggested that most of the tasks included in the prefire planning, education, physical fitness, and training drills dimensions were high in importance, low in unpredictability, and low in danger. Those ratings further indicated that most of the tasks included in the fire calls and auto accidents dimensions were high in importance, high in unpredictability, and high in danger. The ratings further indicated that most of the tasks in the station maintenance dimension were only moderate in importance, low in unpredictability, and low in danger.

The remainder of the data collection was spread over three time periods, each separated by a two to four-month gap. The longitudinal design allowed us to cross-validate the task ratings and conduct tests of substantive relationships using the entire sample of firefighters. More importantly, this design helped establish some temporal precedence for our hypothesized linkages while also removing transient sources of same-source bias.

**Time 1 Measures**

At time 1, the firefighters were given a list of each of the job dimensions previously listed by their chief, accompanied by a description that listed the specific tasks that underlie the dimensions. The firefighters were asked to provide numerical ratings for each of the job dimensions on importance, danger, and unpredictability. These ratings were intended to serve as a cross-validation of the chief’s ratings, and also to distinguish among the items with respect to whether they tapped trust in typical tasks or trust in high-reliability tasks.

The firefighters also completed measures of ability, integrity, benevolence, and identification. These measures were filled out in the firehouse during work hours, with complete confidentiality promised to all participants. All response scales ranged from 1, “strongly disagree,” to 5, “strongly agree.” The measures began with the following instructions: “The questions below ask about your attitudes toward the other firefighters in your company. When you read the word ‘coworkers,’ please think of the other firefighters in your company when answering.” This multiple coworker referent is common in the trust literature, particularly in studies that do not focus on authority relationships (e.g., Cook & Wall, 1980). We chose that referent over a single coworker referent because we worried that the interdependence in the companies would make the choice of any one coworker somewhat arbitrary and contrived.

**Ability.** We used the six-item scale developed by Mayer and Davis (1999). Sample items are “I feel very confident about my coworkers’ skills” and “My coworkers are well qualified.” The coefficient alpha was .92.

**Integrity.** The six-item scale from Mayer and Davis (1999) was used. Sample items are “I never have to wonder whether my coworkers will stick to their word” and “My coworkers’ actions and behaviors are not very consistent” (reverse-coded). The coefficient alpha was .81.

**Benevolence.** This was assessed with the five-item scale developed by Mayer and Davis (1999). Sample items are “My coworkers really look out for what is important to me” and “My coworkers would not knowingly do anything to hurt me.” The coefficient alpha was .88.

**Identification.** The nine-item scale developed by Hinkle, Taylor, Fox-Cardamone, and Crook (1989) was used to assess identification with one’s company. Sample items are “I identify with my company” and “I do not fit in well with the other members of this company” (reverse-coded). The coefficient alpha was .84.

**Time 2 Measures**

Time 2 occurred approximately two months after time 1 and consisted of the administration of the trust measures. We measured trust by providing the firefighters with the list of 18 tasks from the chief’s job analysis and having them respond to each task using the following scale: 1, “I never trust my coworkers with this task,” to 7, “I always trust my coworkers with this task.” It is important to note that the use of the word “trust” in the items classifies this measure as a “direct measure.” Measures based on a willingness-to-be-vulnerable definition are typically used in conjunction with Mayer and colleagues’ (1995) unitary conceptualization of trust, but those measures have sometimes proven unreliable (Mayer & Davis, 1999; Mayer & Gavin, 2005; Schoorman, Mayer, & Davis, 2007). Direct measures have proven to be reliable in past research, and the use of the word “trust” makes responding to the 18 tasks simpler than it would be with a willingness-to-be-vulnerable phrasing. Importantly, a recent meta-analysis revealed that direct measures and willingness-to-be-vulnerable measures exhibited similar relationships with ability, integrity, benevolence, and job performance (Colquitt et al., 2007).

We used the time 1 firefighter ratings of task importance, danger, and unpredictability to pro-
vide an initial breakdown of trust in typical task contexts and trust in high-reliability task contexts. Those ratings, completed using a five-point scale, showed remarkable consistency with the chief’s earlier assessments. Specifically, the same four job dimensions possessed high importance but low unpredictability and low danger: prefire planning (importance = 4.15, unpredictability = 2.40, danger = 1.79), education (importance = 4.20, unpredictability = 2.22, danger = 1.62), physical fitness (importance = 4.07, unpredictability = 2.12, danger = 2.08), and training drills (importance = 4.30, unpredictability = 2.85, danger = 2.82). We therefore used these dimensions to conceptualize trust in typical task settings. As with the chief’s assessment, the firefighter ratings also showed that two job dimensions possessed high importance, high unpredictability, and high danger: fire calls (importance = 4.67, unpredictability = 4.56; danger = 4.54) and auto accidents (importance = 4.18, unpredictability = 3.60, danger = 3.14). We therefore used these two dimensions to conceptualize trust in high-reliability task settings. Note that the station maintenance dimension was rated as having low importance (2.44), low danger (1.28), and low unpredictability (1.46). We omitted this dimension from further analysis so as to not confound the typical versus high-reliability distinction with task importance. As a result, we created the two scales described next.

**Trust in typical task contexts.** Firefighters were asked the extent to which they trusted the other members of their company with reference to the following tasks: “discuss fire tactics before beginning operation,” “determine local fire protection before beginning operation,” “learn about fire protection systems,” “study maps of the local territory,” “lift weights to improve and maintain strength,” “perform stretching exercises to build flexibility,” “exercise to build cardiovascular endurance,” “adequately prepare for aerial drills,” and “increase proficiency in pumping evolutions drill.” The coefficient alpha was .94.

**Trust in high-reliability task contexts.** Firefighters were asked the extent to which they trusted the other members of their company with reference to the following tasks: “protect and rescue civilians in and around fire location,” “protect and rescue fellow firefighters in and around fire location,” “conduct a primary search for people trapped in a burning building,” “use tools and procedures to extinguish the fire,” “perform property salvage during and after the fire,” “administer medical treatment to accident victims,” “survey accident scene for safety considerations,” “collect medical data at accident scenes,” and “feel for injuries on accident victims.” The coefficient alpha was .95.

**Global trust.** As a check on the construct validity of our trust variables, we included a five-item global trust scale with the following items: “In general, I trust my coworkers,” “It bothers me to think that I am vulnerable to my coworkers’ actions” (reverse-coded), “It bothers me when I have to rely on my coworkers during job tasks,” “I am confident that my coworkers will do the right thing on the job,” and “I am confident that I can depend on my coworkers when performing job tasks.” We utilized an ad hoc scale for global trust because existing scales are either unreliable or include items that actually reflect trust antecedents such as ability, integrity, or benevolence (e.g., Cook & Wall, 1980; Mayer & Davis, 1999; Roberts & O’Reilly, 1974).

**Time 3 Measures**

Time 3 occurred approximately four months after time 2 and consisted of the administration of the physical symptoms and withdrawal measures. These measures were filled out in the firehouse during work hours. All items used a scale of 1, “almost never”; 2, “rarely”; 3, “sometimes”; 4, “often”; and 5, “very often.”

**Physical symptoms.** We assessed physical symptoms using 11 items taken from the Physical Symptoms Inventory (Spector & Jex, 1998). Firefighters were asked, how often, in the past 30 days, they had experienced the listed symptoms. Examples are “an upset stomach or nausea,” “acid indigestion or heartburn,” “trouble sleeping,” “headache,” “a backache,” “loss of appetite,” and “heart pounding when not exercising.” The coefficient alpha was .83.

**Withdrawal.** Withdrawal was assessed using ten items taken from Lehman and Simpson (1992). Firefighters were asked how often they performed the listed actions. Examples are “left work situation for unnecessary reasons,” “spent work time on personal matters,” “thought of being absent,” “thought of leaving current job,” and “taken longer lunch or rest breaks than allowed.” The coefficient alpha was .82.

**Archival Data**

We collected data on job performance and high-reliability job demands from department records, with the help of the department’s support staff.

**Job performance.** Data on job performance were assessed with the official employee performance appraisal form used for city firefighters. Using this sort of archival source to capture job performance
has a number of advantages, including expressing performance in the exact terms used by the organization. In this particular case, the firefighters were evaluated on global items that reflected their overall contributions to the organization. Thus, supervisors were asked to appraise the firefighters on a number of facets of overall job performance using a scale of 1, “unsatisfactory,” 3, “conditional,” 5, “meets standards,” 7, “exceeds standards,” and 9, “outstanding.” Items included “decision making,” “meeting objectives/getting results,” “communication,” “level of job skill and knowledge,” and “quality of work.” The coefficient alpha was .83. Because this archival measure has not been used in past research, we tested its dimensionality using a confirmatory factor analysis. A one-factor solution provided a good fit to the data (χ² [n = 95, df = 5] = 9.36, CFI = .99, SRMR = .03). These values imply that all five indicators are valid representations of an overall job performance factor. We should note that performance appraisals were conducted annually beginning one year after a firefighter was hired, meaning that the appraisals occurred at different times for different firefighters. To maintain temporal precedence for our hypothesis tests, we included only those performance appraisals in which the evaluation was recorded after the measurement of trust. Of the 126 firefighters, 81 met this timing restriction. On average, there was a four-month interval between the trust measures and the recording of the performance appraisal rating.

**High-reliability job demands.** To assess the frequency of high-reliability job demands, we obtained the complete log of all calls completed by each firefighter in our sample between the administration of the trust measures and the collection of the outcome measures four months later. On average, each firefighter responded to 111.26 calls during that four-month period (s.d. = 64.77). However, most of the calls fell into the “typical” task category, as they involved little to no situational unpredictability or danger. Examples of such calls included those in which the firefighters dealt with malfunctioning sprinkler systems, locked vehicles, animal rescues, and so forth. To capture high-reliability job demands, we used the call log to code each instance in which a firefighter had to respond to a call that involved an unpredictable or volatile context that would be characterized as dangerous or hazardous. In keeping with the ratings of the chief and the firefighters, virtually all of these calls involved responding to fires and auto accidents. On average, firefighters participated in 17.65 high-reliability calls during the four months (s.d. = 10.55). That percentage of high-reliability job demands is similar to estimated percentages from other research involving firefighters (Scott & Myers, 2005).

**Control Variables**

Our analyses also included conceptually relevant control variables. For example, we controlled for trust propensity in analyses regressing trust onto its antecedents (Mayer et al., 1995; Mayer & Davis, 1999). We measured trust propensity at time 1 using the eight-item trust subscale of agreeableness from the NEO-PI-R (Costa & McCrae, 1992). This scale had a coefficient alpha of .78. Gender and age were controlled in these same analyses because research has suggested that women and older individuals are more trusting (Costa & McCrae, 1992). We also controlled for conscientiousness in analyses regressing the strain-based outcomes (physical symptoms, withdrawal, job performance) onto trust. We did so because firefighting duties demand an attention to detail in both typical and high-reliability task contexts, potentially making conscientious individuals more robust in the face of stressors. We assessed conscientiousness at time 1 using the nine-item scale from the “Big Five” Inventory (John, Donahue, & Kentle, 1991). This scale had a coefficient alpha of .79. We controlled for gender and age in these same analyses, given the need for physical strength and endurance in firefighting.

**Data Analysis**

The first step in our data analysis was to examine the construct validity of our variables measuring trust in reference to typical tasks and trust in reference to high-reliability tasks. To test convergent validity, we regressed both variables onto our global trust variable after controlling for trust propensity (β = .38, p < .05), gender (β = .04, n.s.), and age (β = .00, n.s.). Those results revealed that both trust variables had significant unique relationships with global trust that were approximately equal in magnitude (β = .26, p < .05, for typical trust; β = .29, p < .05, for high-reliability trust). When discriminant validity was tested, a three-factor confirmatory factor analysis provided an adequate fit to the data (χ²[n = 95, df = 227] = 581.90, CFI = .94, SRMR = .08). All factor loadings were statistically significant and averaged .81 for typical trust, .86 for high-reliability trust, and .76 for global trust. Taken together, these results reveal that typical and high-reliability trust are uniquely related to global trust, yet both also represent distinct constructs.

The second step in our data analysis was to verify the appropriate level for our analyses. Although the
trust antecedents, trust dimensions, and strain-related outcomes all referenced individual attitudes and behaviors, it should be noted that the firefighters were nested in—five to six–person companies. That nesting could potentially create nonindependence in observations that could inflate standard errors at the individual level of analysis. To test this possibility, we conducted tests of nonindependence to verify that the individual level of analysis was appropriate. We calculated $r_{wg(j)}$ statistics for those scales, comparing the variation in scale responses to what would be expected given a negatively skewed null distribution (James, Demaree, & Wolf, 1984). A mean value of .70 has emerged as a common rule of thumb signaling that data should be aggregated (Bliese, 2000). The average $r_{wg(j)}$ for the scales was .26, with none reaching the .70 hurdle. Finally, we also calculated intraclass correlations using the between- and within-groups mean squares from an analysis of variance (ANOVA) with group membership as the independent variable. The average ICC1 value was .06, and the average ICC2 value was .13, both of which fall below typical hurdles for aggregating data (Bliese, 2000).

RESULTS

Descriptive Statistics

Table 1 provides the means, standard deviations, and zero-order correlations among the study variables.

Tests of Hypotheses

Hypothesis 1 predicts that trust referenced to typical tasks will be more significantly related to benevolence and identification than trust referenced to high-reliability tasks, whereas Hypothesis 2 predicts that trust referenced to high-reliability tasks will be more significantly related to ability and integrity than trust referenced to typical tasks. We tested these hypotheses with a usefulness analysis in which the two trust variables were regressed on the trust sources in varying orders. Table 2 shows the results of this analysis.

In the first step of the regressions, the three control variables were entered: trust propensity, gender, and age. Our results revealed that trust propensity was significantly related to trust referenced to typical tasks ($\beta = .24$) but not to trust referenced to high-reliability tasks. With respect to Hypothesis 1, trust referenced to typical tasks was more highly related to the affective sources than trust referenced to high-reliability tasks. Those sources explained a significant 24 percent of the variance in typical task trust when entered before the cognitive sources ($\beta = .29$ for benevolence, $\beta = .36$ for identification) and a still significant 11 percent of the variance when entered after the cognitive sources (nonsignificant result for benevolence, $\beta = .34$ for identification). In contrast, the affective sources failed to predict trust in reference to high-reliability tasks, regardless of whether they were entered before or after the more cognitive sources. These results support Hypothesis 1.

With respect to Hypothesis 2, trust referenced to high-reliability tasks was more highly related to the cognitive sources than trust referenced to typical tasks. Those sources explained a significant 14 percent of the variance when entered before the affective sources (nonsignificant result for ability, $\beta = .42$ for integrity) and a still significant 9 percent

TABLE 1

Descriptive Statistics for Study Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ability</td>
<td>4.32</td>
<td>0.64</td>
<td>.07</td>
<td>.08</td>
<td>.13</td>
<td>.11</td>
<td>.16</td>
<td>.13</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Integrity</td>
<td>3.88</td>
<td>0.61</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Benevolence</td>
<td>4.09</td>
<td>0.67</td>
<td>.62</td>
<td>.66</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Identification</td>
<td>4.21</td>
<td>0.55</td>
<td>.39</td>
<td>.45</td>
<td>.52</td>
<td>.39</td>
<td>.22</td>
<td>.18</td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Propensity</td>
<td>3.62</td>
<td>0.54</td>
<td>.27</td>
<td>.48</td>
<td>.34</td>
<td>.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Trust referenced to typical tasks</td>
<td>4.94</td>
<td>1.08</td>
<td>.34</td>
<td>.45</td>
<td>.39</td>
<td>.39</td>
<td>.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Trust referenced to high-reliability tasks</td>
<td>6.01</td>
<td>1.01</td>
<td>.22</td>
<td>.33</td>
<td>.18</td>
<td>.20</td>
<td>.12</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Physical symptoms</td>
<td>1.65</td>
<td>0.64</td>
<td>.07</td>
<td>.08</td>
<td>.13</td>
<td>.11</td>
<td>.16</td>
<td>.13</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Withdrawal</td>
<td>2.20</td>
<td>0.60</td>
<td>.09</td>
<td>.11</td>
<td>.07</td>
<td>.15</td>
<td>.27</td>
<td>.43</td>
<td>.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Job performance</td>
<td>6.90</td>
<td>0.81</td>
<td>.15</td>
<td>.15</td>
<td>.25</td>
<td>.16</td>
<td>.16</td>
<td>.10</td>
<td>.09</td>
<td>.03</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. High-reliability demands</td>
<td>17.65</td>
<td>10.55</td>
<td>.06</td>
<td>.08</td>
<td>.09</td>
<td>.15</td>
<td>.04</td>
<td>.10</td>
<td>.13</td>
<td>.14</td>
<td>.01</td>
<td>.02</td>
<td>.21</td>
<td>.28</td>
<td>.21</td>
</tr>
<tr>
<td>12. Conscientiousness</td>
<td>4.05</td>
<td>0.45</td>
<td>.29</td>
<td>.22</td>
<td>.31</td>
<td>.35</td>
<td>.21</td>
<td>.14</td>
<td>.01</td>
<td>.02</td>
<td>.21</td>
<td>.28</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Gender</td>
<td>.08</td>
<td>0.27</td>
<td>.08</td>
<td>.08</td>
<td>.04</td>
<td>.05</td>
<td>.12</td>
<td>.04</td>
<td>.14</td>
<td>.26</td>
<td>.07</td>
<td>.11</td>
<td>.05</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>14. Age</td>
<td>38.93</td>
<td>8.03</td>
<td>.25</td>
<td>.09</td>
<td>.26</td>
<td>.22</td>
<td>.11</td>
<td>.09</td>
<td>.02</td>
<td>.20</td>
<td>.33</td>
<td>.07</td>
<td>.40</td>
<td>.30</td>
<td>.11</td>
</tr>
</tbody>
</table>

* $n = 96$ after listwise deletion.
* $p < .05$, two-tailed.
of the variance when entered after the affective sources (nonsignificant result for ability, $\beta = .43$ for integrity). In contrast, the cognitive sources explained significant variance in trust referenced to typical tasks only when entered before the affective sources ($R^2 = .16$, nonsignificant result for ability, $\beta = .39$ for integrity). The effects of the cognitive sources became nonsignificant once the affective sources were controlled. These results therefore provide partial support for Hypothesis 2, though it must be noted that integrity was strongly related to both trust variables.

Hypothesis 3 predicts that trust referenced to typical tasks and trust referenced to high-reliability tasks will each have unique relationships with physical symptoms, withdrawal, and job performance. Table 3 show the results of the regression analyses used to test this hypothesis. The first step of the regressions entered the three control variables: conscientiousness, gender, and age. Our results revealed that gender predicted physical symptoms, with females experiencing more symptoms ($\beta = .24$). Age predicted withdrawal, with older firefighters engaging in more frequent withdrawal behaviors ($\beta = .30$). Finally, conscientiousness was shown to be a significant predictor of job performance ($\beta = .29$).

The second step of the regressions entered the two trust variables. The two trust variables explained 7 percent of the variance in physical symptoms, with that effect driven by trust in high-reliability tasks. Higher levels of that form of trust were associated with fewer physical symptoms ($\beta = .29$). Trust referenced to typical tasks did not yield a

<table>
<thead>
<tr>
<th>TABLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Usefulness Analysis with Affective and Cognitive Sources of Trust</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Trust Referenced to Typical Tasks</th>
<th>Trust Referenced to High-Reliability Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
<td>$\Delta R^2$</td>
</tr>
<tr>
<td>Affective sources first</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Propensity</td>
<td>.07</td>
<td>.07</td>
</tr>
<tr>
<td>Gender</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Age</td>
<td>−.09</td>
<td>−.09</td>
</tr>
<tr>
<td>2. Benevolence</td>
<td>.31*</td>
<td>.24*</td>
</tr>
<tr>
<td>Identification</td>
<td>.36*</td>
<td>.36*</td>
</tr>
<tr>
<td>3. Ability</td>
<td>.34</td>
<td>.03</td>
</tr>
<tr>
<td>Integrity</td>
<td>.25</td>
<td>.25</td>
</tr>
<tr>
<td>Cognitive sources first</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Propensity</td>
<td>.07</td>
<td>.07</td>
</tr>
<tr>
<td>Gender</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Age</td>
<td>−.09</td>
<td>−.09</td>
</tr>
<tr>
<td>2. Ability</td>
<td>.23*</td>
<td>.16*</td>
</tr>
<tr>
<td>Integrity</td>
<td>.39*</td>
<td>.39*</td>
</tr>
<tr>
<td>3. Benevolence</td>
<td>.34*</td>
<td>.11*</td>
</tr>
<tr>
<td>Identification</td>
<td>.34*</td>
<td>.34*</td>
</tr>
</tbody>
</table>

* $n = 96$ after listwise deletion.
* $p < .05$, two-tailed.

<table>
<thead>
<tr>
<th>TABLE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Moderating Effects of High-Reliability Job Demands</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th>Physical Symptoms</th>
<th>Withdrawal</th>
<th>Job Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R^2$</td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>1. Conscientiousness</td>
<td>.10*</td>
<td>.10*</td>
<td>.04</td>
</tr>
<tr>
<td>Gender</td>
<td>.24*</td>
<td>.24*</td>
<td>−.07</td>
</tr>
<tr>
<td>Age</td>
<td>.19</td>
<td>.19</td>
<td>.30*</td>
</tr>
<tr>
<td>2. Trust referenced to typical tasks</td>
<td>.17*</td>
<td>.07*</td>
<td>.06</td>
</tr>
<tr>
<td>Trust referenced to high-reliability tasks</td>
<td>−.29*</td>
<td>−.29*</td>
<td>.10</td>
</tr>
<tr>
<td>3. High-reliability demands (HRD)</td>
<td>.19</td>
<td>.02</td>
<td>−.16</td>
</tr>
<tr>
<td>4. Trust (typical) $\times$ HRD</td>
<td>.20</td>
<td>.01</td>
<td>−.09</td>
</tr>
<tr>
<td>Trust (high reliability) $\times$ HRD</td>
<td>.19</td>
<td>.19</td>
<td>−.05</td>
</tr>
</tbody>
</table>

* $n = 89$ for physical symptoms and withdrawal after listwise deletion; $n = 70$ for job performance.
* $p < .05$, two-tailed.
significant result. The two trust variables explained 9 percent of the variance in withdrawal, with that effect driven by trust referenced to typical tasks. Higher levels of that form of trust were associated with less withdrawal ($\beta = -.36$). Trust referenced to high-reliability tasks did not yield a significant result. Contrary to expectations, neither trust variable had a significant direct relationship with job performance. Hypothesis 3 therefore received only partial support.

Hypothesis 4 predicts that high-reliability job demands will moderate the effects of trust referenced to typical tasks in such a way that the effects become less significant as those demands increase in frequency and more significant as those demands decrease in frequency. Hypothesis 5 predicts the opposite pattern for trust referenced to high-reliability tasks. We tested both predictions using moderated regression analysis, as shown in the third and fourth steps in Table 3. The third step contained the high-reliability job demands moderator, which failed to explain incremental variance in any of the three outcomes. The tests of Hypotheses 4 and 5 occur in the fourth step, in which the trust by job demands product terms are entered. The product terms failed to explain incremental variance in physical symptoms and withdrawal but did explain incremental variance in job performance ($\Delta R^2 = .10$). Two unique interactions drove that effect, as both typical and high-reliability forms of trust interacted with job demands. Figure 1 shows the plots of these effects and exhibit the predicted pattern. The relationship between trust in typical tasks and job performance was more positive when high-reliability demands were less common. The relationship between trust in high-reliability tasks and job performance was more positive when high-reliability demands were more common. Hypotheses 4 and 5 therefore received partial support.

**DISCUSSION**

Although trust in one’s coworkers is critical in virtually any job, it must be noted that individuals may make distinctions about what tasks they do
(and do not) trust their coworkers to perform (Baier, 1986; Gabarro, 1978; Mayer et al., 1995). We suggested that such distinctions become salient in jobs with the following duality: workdays are typically spent on important yet predictable tasks occasionally interrupted by tasks occurring in volatile and dangerous situations with higher stakes. In keeping with that assertion, our results suggest that firefighters do distinguish between trust referenced to typical tasks and trust referenced to high-reliability tasks. When asked to directly rate their level of trust in their coworkers on a list of tasks derived from a job analysis, trust assessments for typical tasks and trust assessments for high-reliability tasks loaded on separate factors. Having established that this distinction exists, our study focused on two questions: What predicts these impressions, and What are their consequences? Our findings offer a number of theoretical implications for the trust literature.

**Theoretical Implications**

First, the distinction between trust referenced to typical tasks and trust referenced to high-reliability tasks brings a new dynamic to the literature on trust formation. In their models, researchers have typically focused on the effects of time, arguing that more cognitive sources of trust (i.e., cognition- or knowledge-based trust) are most important early in a working relationship, with more affective sources of trust (i.e., affect- or goodwill-based trust, identification-based trust) supplementing those evaluations later (Lewicki & Bunker, 1995; McAllister, 1995, McAllister et al., 2006; Shapiro et al., 1992). Our results suggest that it is also important to consider tasks. Trust regarding typical tasks was related to both cognitive and affective sources. Thus, when firefighters decided whether to trust their coworkers with planning, training, and fitness tasks, they considered the integrity of those coworkers, given the need for consistent performance of those tasks day in and day out. However, they also considered benevolence and identification, as firefighters were more likely to trust their coworkers when a caring relationship existed and when they identified with the group. Such influences may be particularly important to firefighters, given the long hours that they spend together and the cohesion and pride that develop within companies.

In contrast, the more affective sources were much less predictive of trust in reference to high-reliability tasks, as benevolence and identification failed to explain why firefighters did (or did not) trust their coworkers to perform the tasks associated with fire calls and auto accidents. Instead, those trust assessments seemed to be more calculated. We reasoned that the stakes involved in high-reliability contexts encourage a more analytical and controlled process for the trust decision—focusing firefighters on the most relevant possible information. Integrity information should be particularly relevant in high-reliability contexts because integrity can be viewed as a sort of dispositional reliability that is vital in contexts that demand error-free performance. That powerful integrity effect seems intuitive when one considers the psychological dynamics of an emergency situation. If a firefighter is in trouble inside a burning building, he or she needs to know that coworkers will “do what they said they would do.” Sticking to one’s word, being consistent in one’s actions, and adhering to principled codes are likely to be critical in such emergencies.

One unexpected finding with respect to trust formation was the uniformly nonsignificant effects for ability. Contrary to predictions, ability was not related to trust in high-reliability task contexts, despite the situational unpredictability and danger inherent in those circumstances. It is also interesting to note that ability was not related to trust in typical task contexts, despite the skill requirements imposed by planning, education, and training tasks. It may be that overall assessments of ability have less relevance in jobs with the kind of duality that firefighting has. In their discussion of trust being bounded by types of tasks, Mayer and colleagues (1995) made the point that ability assessments may also fail to generalize across situations. Our results may have differed if we had separated ability referenced to typical tasks and ability referenced to high-reliability tasks. In contrast, it would make less sense to break down assessments of integrity, benevolence, and identification, as those constructs capture more global characteristics of trustees.

A second theoretical implication centers on trust effects. Scholars have often explained the attitudinal and behavioral effects of trust by noting that distrust can be a stressor (Dirks & Ferrin, 2002; Mayer & Gavin, 2005). Our results suggest that such effects may be both task- and context-dependent. For example, our results revealed that trust regarding high-reliability tasks predicted physical symptoms but not withdrawal. It may be that a lack of high-reliability trust is a stressor that accumulates regardless of whether high-reliability job demands are frequent or infrequent. After all, firefighters know that an urgent fire call or auto accident will eventually come. Withdrawal is often viewed as a form of emotion-focused coping via regulating stressful emotions (Lazarus & Folkman, 1984). The
The relationship between trust and job performance was more complex. Neither trust referenced to typical tasks nor trust referenced to high-reliability tasks predicted performance across contexts. Both results are somewhat at odds with past research, though some meta-analytic estimates of the trust-performance relationship are not much higher than our effect sizes (Colquitt et al., 2007; Dirks & Ferrin, 2002). Instead, the relevance of the trust dimensions varied according to the kinds of job demands the firefighters faced during the period of study, in keeping with the logic of the transactional model (Lazarus & Folkman, 1984). For firefighters who experienced fewer high-reliability calls during those months, trust referenced to typical tasks had a positive relationship with job performance. That relationship disappeared as high-reliability calls became more frequent, at which point high-reliability-task trust became more predictive. These interactions capture an interesting aspect of trust in jobs that possess the typical versus high-reliability duality, as the relevance of a given trust variable shifted according to the types of risks experienced.

Limitations and Suggestions for Future Research

This study possesses some limitations that should be noted. For example, many of the variables were assessed with self-reports, creating the possibility that method bias may have inflated some of our relationships. We did separate our collection of survey data into three different periods to create temporal precedence and remove transient sources of bias, however. We also used unobtrusive measures of job demands and job performance, using data from company records to assess those constructs. Webb and Weick (1979) noted that unobtrusive measures can bring some balance to designs that rely almost exclusively on self-report measures. However, the use of such measures does create its own limitations. For example, we inferred that firefighters would use job demands to infer perceptions of risk. However, a self-report measure of risk perceptions would be needed to validate that supposition.

In addition, the sample size for some of our tests of hypotheses was fairly low. Although our initial sample comprised the full roster of firefighters employed in their city, some attrition occurred over time. Obtaining data from firefighters in other cities would have allowed us to boost our statistical power, potentially supporting a greater percentage of our hypotheses. Our sample was also relatively homogeneous with respect to ethnicity and gender. Although this homogeneity may be representative of firefighters in general, it may also limit the generalizability of some of our findings. It may have also contributed to some degree of range restriction in our variables of interest, although the most restricted variables still yielded significant findings in many cases.

Although we utilized existing scales for ability, integrity, benevolence, identification, and our physical symptoms and withdrawal outcomes, our trust measures were ad hoc. Most studies that adopt a unitary perspective on trust—particularly when it is cast as a consequence of trustworthiness—use one of the scales created by Mayer and colleagues (Mayer & Davis, 1999; Mayer & Gavin, 2005; Schoorman et al., 2007). As noted previously, we felt that taking a direct measurement approach and using the word “trust” would reduce the complexity of our task-based items, relative to a willingness-to-be-vulnerable phrasing. That measurement choice seemed justified given that Colquitt and colleagues’ (2007) review revealed convergence in findings with direct and willingness-to-be-vulnerable measures. Still, the use of ad hoc measures hinders comparability of results among studies and raises the possibility that the findings of a given study are measure-specific.

Finally, the items that we generated for our ad hoc measures of trust were developed on the basis of an interview with a single subject matter expert. It is therefore possible that some of the items were unique to our setting. It should be noted, however, that the tasks identified by the chief corresponded well to those included in O*NET. Moreover, the
chief's ratings of the tasks' importance, danger, and unpredictability corresponded well to the firefighter ratings. Moreover, the measures exhibited a pattern of relationships that was consistent with much of our theorizing. Therefore, although we readily acknowledge that it would have been ideal to interview multiple subject matter experts in the scale development process, the measures of firefighter trust demonstrated content, construct, and nomological validity, and it would be difficult to explain how this pattern of results could be a measurement artifact.

Despite those limitations, our study suggests a number of avenues for future research. First and foremost, more research is needed on the development and operation of trust in jobs with a typical/high-reliability duality. Attempts to replicate our results in samples of police officers, military personnel, security guards, and other firefighters would be worthwhile. It may also be that trust is task-dependent in more traditional jobs that do not possess a true high-reliability component. For example, trial attorneys could discriminate between trust in regards to general case management and trust in regards to oral arguments at trial. Surgeons may discriminate between trust in regards to common, typical procedures and decision making and trust in regards to more radical or unexpected types of surgery. These suggestions point to the need to continue examining the task-based differentiation of trust in future research (Baier, 1986; Govier, 1994; Mayer et al., 1995).

Research could also focus on how trust in typical and high-reliability tasks develops over time. Although our sample members were relatively senior in tenure, which is not unusual for firefighters, future research could focus on how the two forms of trust develop when newcomers are introduced into a work unit. Myers's (2005) qualitative study of trust formation among probationary firefighters revealed that newcomers were often asked to establish themselves on station-based tasks such as cooking, cleaning, and answering the phone. Interviews with senior firefighters suggested that the probationary firefighters needed to earn trust for their performance on these sorts of tasks before it could be earned for more important job tasks (see also Haas, 1972). Although the tasks Myers described lack the perceived importance of the tasks in our typical category, it may be that trust referenced to typical tasks is established earlier in a new hire’s tenure before serving as a foundation for trust referenced to high-reliability tasks. Establishing such a sequence requires the use of longitudinal methods that track trust development in a setting in which new hires are quite common.

Practical Implications

The results of our study also offer a number of practical implications. Our findings suggest the importance of an emphasis on integrity, as integrity was related to both trust variables in our sample. Organizations may benefit from building more of an integrity component into their performance evaluation systems by capturing behaviors such as sticking to one’s word, acting on sound principles, and treating others fairly and consistently. Such efforts would likely be particularly important early in an employee’s tenure, before trust assessments are fully formed. Another potential suggestion is to emphasize the assessment of such behaviors in the hiring and screening process in an effort to select employees who will be deemed more trustworthy in various task contexts.

Our results also suggest that firms should take steps to build a sense of benevolence and identification among coworkers. Mean levels of both variables were relatively high in our sample, possibly because of the unique culture and physical arrangements associated with firefighting. Still, benevolence and identification did vary in our sample and were significantly associated with trust referenced to typical tasks. Team-building activities or group-centered development activities may be effective in this regard. Organizations could also focus on the operation of formal and informal socialization practices. Qualitative studies of trust formation among probationary employees have illustrated how socialization practices can shape trust development in both mundane and dangerous task environments (Haas, 1972; Myers, 2005).

Finally, it may be worthwhile to acknowledge that trust may be lacking in some jobs or in some departments of most organizations. The fact that low levels of trust were associated with physical symptoms and withdrawal points to the importance of stress management practices. For example, organizations concerned with trust levels could institute workshops to teach employees effective coping strategies. Karasek and Theorell’s (1990) job demands–control-support model suggests that active coping fostered through work control and social support should improve physical health. By providing employees with effective coping strategies, the negative outcomes associated with low trust can be minimized (Lazarus & Folkman, 1984).

REFERENCES


Hastie, R., & Park, B. 1986. The relationship between memory and judgment depends on whether the judgment task is memory-based or on-line. *Psychological Review*, 98: 258–268.


Mayer, R. C., & Gavin, M. B. 2005. Trust in management


---

Jason A. Colquitt (colq@uga.edu) is the William H. Willson Distinguished Chair in the Department of Management at the University of Georgia’s Terry College of Business. He received his Ph.D. from Michigan State University’s Eli Broad Graduate School of Management. His research interests include organizational justice, trust, team effectiveness, and personality influences on task and learning performance.

Jeffery A. LePine (jeff.lepine@asu.edu) is the PetSmart Chair in Leadership in the Department of Management at Arizona State University’s W. P. Carey School of Business. He received his Ph.D. from Michigan State University’s Eli Broad Graduate School of Management. His research interests include team effectiveness, adaptation, citizenship behavior, engagement, and stress.

Cindy P. Zapata (cindy.zapata@mgt.gatech.edu) is an assistant professor in organizational behavior at the Georgia Institute of Technology’s College of Management. She received her Ph.D. from the University of Florida’s Warrington College of Business. Her research interests include organizational justice, personality, motivation, and leadership.

R. Eric Wild (ericwild29@hotmail.com) is a manager at Alligator Properties and a visiting lecturer for the Department of Management at the University of Florida’s Warrington College of Business. He received his Ph.D. from that department.