YOU CAN'T YELL "TIMBER!" IF YOU DON'T SEE THE FALLING TREE: HARNESSING CONSTRUAL LEVEL THEORY TO PROMOTE THE ETHICAL FRAMING OF SAFETY PERFORMANCE

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ABSTRACT

Jonathan Keeney: YOU CAN'T YELL "TIMBER!" IF YOU DON'T SEE THE FALLING TREE: HARNESSING CONSTRUAL LEVEL THEORY TO PROMOTE THE ETHICAL FRAMING OF SAFETY PERFORMANCE
(Under the direction of David A. Hofmann)

Harm is a fundamental ethical concern. Nonetheless, people often fail to see decisions that prevent harm as ethical choices, particularly when harmful outcomes are rare. Drawing on construal level theory, this dissertation proposes and tests a model of how the ethical implications of workplace decisions might be made more salient for workers, leading to more ethical choices. This investigation is undertaken in the context of workplace safety, in which harm prevention is paramount. Specifically, adopting an ethical decision frame (i.e., seeing safety-related decisions as ethical decisions) is predicted to increase safety performance (Hypothesis 1). Lower levels of construal will tend to promote ethical decision frame adoption (Hypothesis 2), particularly when an individual is high in other-orientation (Hypothesis 3). Combined, these predictions suggest a moderated-mediation model in which the indirect effect of construal level on safety performance via ethical decision framing is stronger at higher levels of other-orientation. These predictions are tested in three empirical studies—a quasi-experiment with offshore drilling industry workers (Study 1), a naturalistic, simulation-based laboratory study (Study 2), and a laboratory experiment (Study 3). The results of these studies are mixed, but taken together provide tentative support for the preceding hypotheses. Contributions, practical implications, and future directions are discussed.

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CHAPTER 1: INTRODUCTION

Ethical concerns vary across people and cultures, but decades of research have established that perceptions of harm play a central role in ethical decision making (Kohlberg, 1969; Piaget, 1932; Turiel, 1983). Contemporary psychological theories broadly agree that harm is likely the most important, frequent, and universal ethical consideration (Haidt, Graham, & Ditto, 2015; Hofmann, Wisneski, Brandt, & Skitka, 2014; Schein & Gray, 2017).

When making a decision in which ethical considerations (e.g., harm prevention) are salient, an individual may adopt an *ethical decision frame* (i.e., conceptualize or categorize the decision as an ethical one; Tenbrunsel & Messick, 1999). Compared to other decision frames (e.g., business frames), ethical frames promote more ethical judgments and behaviors (e.g., Kouchaki, Smith-Crowe, Brief, & Sousa, 2013; Pillutla & Chen, 1999; Tenbrunsel & Messick, 1999). Related findings from investigations of moral awareness (e.g., Fleischman & Valentine, 2003; Singhapakdi, 1999; Singhapakdi, Salyachivin, Viraku, & Veerayangkur, 2000; Singhapakdi, Vitell, & Franke, 1999; Singhapakdi, Vitell, & Kraft, 1996) and moral conviction (e.g., Fiske & Tetlock, 1997; Skitka, 2002; Skitka, Bauman, & Sargis, 2005; Skitka & Mullen, 2002; Van Bavel, Packer, Haas, & Cunningham, 2012) provide further evidence that simply recognizing the ethical content of a decision can result in more ethical outcomes.

In practice, however, people often fail to recognize the ethical implications of their decisions, particularly in organizational settings (e.g., Chugh, Bazerman, & Banaji, 2005; Tenbrunsel & Messick, 2004; Welsh, Ordóñez, Snyder, & Christian, 2014). Such failures are especially likely when it is uncertain, or unclear, whether harm will result from one's actions. An

individual's ability to recognize the ethical content of a decision depends upon the probability of effect (i.e., the perceived likelihood that a given action—or inaction—will result in harm; Jones, 1991). Moreover, people have difficulty estimating probabilities accurately (Kahneman, Slovic, & Tversky, 1982). Cognitive errors, including the availability heuristic (Tversky & Kahneman, 1973; Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simons, 1991) and overconfidence bias (Lichtenstein, Fischhoff, & Phillips, 1982; Moore & Healy, 2008), lead to subjective probability estimates that understate the—already low—likelihood of rare, undesirable events (e.g., accidents).

The preceding suggests a dilemma: The ethical framing of workplace decisions may promote ethical behavior, but ethical framing is determined by the degree and probability of potential harm at stake. How, then, can ethical framing be encouraged—without actually making accidents more harmful, or more likely?

Construal level theory (Trope & Liberman, 2003; 2010) provides a potential solution to this dilemma. Construal level theory proposes that individuals' mindsets vary across contexts, from abstract and decontextualized (high level) to concrete and contextualized (low level). This distinction is often illustrated with the metaphor of "seeing the forest" versus "seeing the trees." Differences in construal level determine psychological distance—the subjective perception of spatial, temporal, social, and hypothetical distance between the self and other objects (e.g., people, places, events; Trope & Liberman, 2010). A given object is perceived to be nearer at lower (vs. higher) levels of construal (Bar-Anan, Liberman, & Trope, 2006; Bar-Anan, Liberman, Trope, & Algom, 2007).

Construal level influences subjective probability estimates, such that probabilistic outcomes appear more likely when viewed from a more concrete (i.e., lower level) mindset

(Wakslak & Trope, 2009). Harmful outcomes should therefore appear more likely to workers who adopt lower levels of construal, independent of actual base-rates. Individuals also perceive other people as closer, and more similar, to themselves at lower levels of construal (Stephan, Liberman, & Trope, 2009). Accordingly, workers who adopt lower levels of construal may experience a stronger sense of obligation to prevent others' suffering (i.e., coworkers who might be injured if one behaves negligently; Small & Loewenstein, 2003; Small & Simonsohn, 2008). Thus, promoting lower levels of construal among workers may increase their *subjective* perceptions of the degree and probability of harm at stake; thereby encouraging the ethical framing of workplace decisions without increasing actual risk.

This application of construal level theory may be particularly relevant to the context of workplace safety. Workplace safety efforts involve a variety of employee behaviors, but are ultimately concerned with the prevention of harmful outcomes (i.e., accidents, injuries, fatalities; Christian, Bradley, Wallace, & Burke, 2009; Hofmann & Stetzer, 1996; Neal & Griffin, 2006). The possibility of harm might lead employees to view safety-promoting behaviors (i.e., safety performance; Griffin & Neal, 2000) as ethical obligations. However, workplace accidents and injuries are generally low base-rate phenomena, and are unlikely to be caused by a single deviation from safety standards (Zohar, 2000). Thus, the ethical concerns raised by the context of workplace safety may be overlooked due to the rarity of harmful outcomes.

One well-known tradition from the field of engineering is particularly illustrative. In 1907, seventy-five workers were killed when the Quebec Bridge collapsed during construction, due to poor planning and decision making by the overseeing engineers. Soon after, in an effort to prevent future disasters, Canadian universities established the tradition of presenting new engineering graduates with the Iron Ring—a simple metal band to be worn throughout their

careers. The Iron Ring is intended to provide a "sharp reminder" of engineering ethics, and the obligation to prioritize safety. The tradition remains widespread today, and (apocryphal) legend holds that the rings are still forged from the steel of the ill-fated Quebec Bridge (Agapakis, 2014). The Iron Ring is a subtle cue that invokes a specific accident, thereby encouraging engineers to adopt a more concrete mindset with respect to the potential implications of their work.

With many safety performance behaviors, workers protect both themselves and others (e.g., coworkers). Motives for these behaviors may vary. Workers high in other-orientation—the propensity to be concerned for other people (Meglino & Korsgaard, 2004)—will be more motivated by potential harm to others. This motivation should facilitate ethical framing (which is driven by perceived *interpersonal* harm; Gray, Waytz, & Young, 2012), particularly when those at risk are seen as closer, or more likely to be harmed (i.e., when viewed from a lower level of construal). Workers low in other-orientation (and, correspondingly, more self-interested; Meglino & Korsgaard, 2004, 2007) will instead be more motivated by potential harm to themselves, buffering the effect of construal level on the ethical framing of safety decisions. The preceding arguments can be integrated into a conditional indirect effect (i.e., moderated mediation; Edwards & Lambert, 2007) model, in which an indirect effect of construal level on safety performance via ethical framing is relatively strong at high levels of other-orientation, but attenuated or absent at low levels of other-orientation.

This current research makes several theoretical and practical contributions. This dissertation represents the first effort to directly integrate ethical decision making and workplace safety. Given the conceptual overlap between ethics and safety (due, in particular, to their shared focus on harm), the intersection of these literatures represents a potentially fruitful area for new

research. Illustrating this potential, the current research makes contributions to the workplace safety literature, by identifying construal level and, more proximally, ethical decision frames, as novel antecedents of safety performance. In doing so, it also responds to the calls of prominent ethics scholars to utilize more novel, organizationally-grounded dependent variables (Smith-Crowe & Zheng, 2016; Tenbrunsel & Smith-Crowe, 2008; Warren & Smith-Crowe, 2008), and to recognize the ethical content inherent—but understudied—in many organizational activities (Brief & Smith-Crowe, 2016).

Second, this dissertation contributes to an ongoing debate concerning the relationship between construal level and ethical decision making. While some investigations have found that higher levels of construal promote more ethical judgments and behavioral intentions (e.g., Agerström & Björklund, 2009; Eyal, Liberman, & Trope, 2008; Tenbrunsel, Diekmann, Wade-Benzoni, & Bazerman, 2007), others have produced seemingly contradictory results (e.g., Gong & Medin, 2012; Keeney & Hofmann, 2016). The current research provides new insight into this puzzle. Rather than proposing a connection between construal level and ethical decision making generally, this research focuses on a specific stage in the ethical decision making process (ethical decision frame adoption), and identifies a novel boundary condition of the construal level-ethical decision frame link (other-orientation). Additionally, this dissertation stresses the importance of context, focusing specifically on safety-related decisions, and identifying distinguishing features of this context (e.g., negative goals). Comparing these factors across studies—i.e., ethical decision making stage, boundary conditions, context—might help to reconcile prior work in this area.

Third, this dissertation identifies a novel antecedent, and boundary condition, for ethical decision frame adoption. Reviews of the ethical decision making literature have highlighted the

ethical decision frame construct as a valuable lens for clarifying processes of moral awareness (Tenbrunsel & Smith-Crowe, 2008) or moralization (Kreps & Monin, 2011), but empirical work involving ethical decision frames is limited. Prior research has identified only a few specific contextual antecedents of decision frame adoption, including sanctioning systems (Tenbrunsel & Messick, 1999, Study 3) and money salience (Kouchaki et al., 2013), while cognitive factors that shape individuals' categorization of decisions have gone unaddressed. Moreover, prior investigations of decision frame adoption have been conducted almost exclusively in the laboratory; thus, this dissertation is among the first efforts to study the adoption of decision frames in more naturalistic settings.

Finally, in practical terms, this dissertation may provide guidance for simple interventions targeting a critical organizational outcome (i.e., safety performance). Prior research has shown that material symbols can have substantive effects in the ethical domain (Desai & Kouchaki, 2017), and the example of the Iron Ring illustrates how a small cue can make harm-prevention more salient, bringing the ethical content of safety performance into focus. Experimental tests of construal level theory in prior work suggest that construal level-based interventions may be embedded in managerial communication, signage, safety materials, etc., and the current research illustrates the potential impact of doing so. Promoting lower levels of construal among employees, particularly at safety-critical times or locations, may potentially improve safety outcomes.

The remainder of this dissertation unfolds as follows. I first review relevant work from the extant workplace safety, ethical decision making, construal level theory, and other-orientation literatures. These literatures are integrated to generate a set of novel hypotheses, resulting in the complete theoretical model depicted in Figure 1. I then report the method and

results of three empirical studies: a quasi-experimental survey study (Study 1), a multi-round simulation study (Study 2), and a laboratory experiment (Study 3). Lastly, I discuss the findings of this research, highlighting theoretical and practical implications, limitations, and future directions.

CHAPTER 2: THE CONTEXT OF SAFETY PERFORMANCE

Construct Background

Safety performance is broadly defined as "the actions or behaviors that individuals exhibit in almost all jobs to promote the health and safety of workers, clients, the public, and the environment" (Burke, Sarpy, Tesluk, & Smith-Crowe, 2002, p. 432). Thus, safety performance behaviors share the distal intention of preventing harm.

While the specific demands of workplace safety are highly context-dependent, safety researchers have advanced models of worker safety performance that can be applied across jobs and occupational fields. Burke and colleagues (2002) found support for a model consisting of four correlated factors: using personal protective equipment, engaging in work practices to reduce risk, communicating health and safety information, and exercising employee rights and responsibilities (i.e., pertaining to relevant safety laws and regulations). The instrument developed from this model (the General Safety-Performance Scale [GSS]; Burke et al., 2002) has been applied extensively in industry, and to evaluate the effectiveness of regional and national safety initiatives (e.g., Sarpy, Rabito, & Burke, 2015). However, this model has been applied only infrequently in the field of applied psychology (Hofmann, Burke, & Zohar, 2017).

Many organizational scholars have instead favored a more general two-factor model of safety performance, originally introduced by Andriessen (1978) with the labels of "carefulness" and "initiatives." This model was later refined by Griffin and Neal (2000), following the broader distinction in organizational behavior between task performance and contextual performance (Borman & Motowidlo, 1993; Campbell, McCloy, Oppler, & Sager, 1993). *Safety compliance* is

analogous to task performance, and involves adhering to safety rules and procedures, and completing work tasks in a safe manner. *Safety participation* is analogous to contextual performance, and encompasses helping coworkers, promoting workplace safety programs, demonstrating initiative, and putting effort into workplace safety improvement (Griffin & Neal, 2000; Neal et al., 2000; Neal & Griffin, 2004). Evidence from meta-analyses suggests moderate to high correlations between these two facets (Christian et al., 2009; Clarke, 2006a).

Still other investigations have highlighted behaviors that may not cleanly fit either model, yet seem to fall under the umbrella of safety performance, including: safety citizenship (i.e., discretionary behaviors focused on improving the safety performance of other team members and the organization more generally; Hofmann, Morgeson, & Gerras, 2003); and safety commitment (i.e., behaviors conveying an employee's internalization of organizational values with respect to safety; Hofmann & Morgeson, 1999).

In sum, the domain of safety performance encompasses a variety of behaviors; but, these behaviors are nonetheless modeled as correlated dimensions of a higher-order safety performance construct. Given the conceptual and empirical overlap between safety performance dimensions, and the shared focus of all safety performance behaviors on health and safety promotion (or, alternately stated, harm prevention), I focus on the broader construct of safety performance in the current research.

Outcomes of Safety Performance

In keeping with a harm prevention-based definition of safety performance, the most-commonly evaluated outcome of safety performance is the incidence of harmful events (i.e., accidents, injuries, or fatalities). Studies conducted in a variety of organizational settings provide compelling support for a negative relationship between safety performance and the occurrence of

accidents and injuries (e.g., Barling, Loughlin, & Kelloway, 2002; Hofmann & Morgeson, 1999; Hofmann & Stetzer, 1996; Komaki, Barwick, & Scott, 1978; Mearns, Whitaker, & Flin, 2003; Neal & Griffin, 2006; Paul & Maiti, 2007; Probst, 2004; Probst & Brubaker, 2001; Wallace & Vodanovich, 2003; Zacharatos, Barling, & Iverson, 2005).

In one of the earliest examples of this research, Komaki and colleagues (1978) found that improved worker safety performance (following a "behavioral analysis" treatment) led to a decreased injury rate in two food manufacturing plants. Illustrating the other side of this effect, in a study conducted at a chemical processing plant, Hofmann and Stetzer (1996) found that unsafe employee behaviors were positively associated with actual accidents. A recent meta-analysis of 90 primary studies found a moderate, negative effect of safety performance on accidents and injuries (M_ρ = -.31), and no significant difference between the contributions of safety compliance and safety participation (Christian et al., 2009).

Safety performance is defined in terms of behavioral intentions, and the available evidence strongly indicates that safety performance behaviors are indeed effective in terms of preventing harm. This conclusion further illustrates both the conceptual overlap between safety and harm, and the practical importance of safety performance.

Antecedents of Safety Performance

Workplace safety has been an active area of organizational scholarship for more than a century (for a review, see Hofmann et al., 2017). During that time, the primary focus of the workplace safety literature has been to identify factors that may promote, or discourage, safety performance and its more distal outcomes (i.e., accidents, injuries).

Particular attention has been paid to organizational, or situational, antecedents of safety performance. Most notable among these is safety climate (i.e., "shared employee perceptions

about the relative importance of safe conduct in their occupational behavior;" Zohar, 1980, p. 96). Numerous primary studies (for a review, see Zohar, 2014) and at least two meta-analyses (Christian et al., 2009; Clarke, 2006a) have demonstrated that safety climate significantly predicts both safety performance behaviors and accidents. Other features of the organizational context that influence safety performance and related outcomes include: leadership (Barling et al., 2002; Hofmann & Morgeson, 1999; Hofmann et al., 2003; Zohar 2002a; Zohar & Luria, 2003), group processes (DeJoy, Schaffer, Wilson, Vandenberg, & Butts, 2004; Frone, 1998; Hayes, Perander, Smecko, & Trask, 1998; Hofmann & Stetzer, 1996; Siu, Phillips, & Leung, 2003; Watson, Scott, Bishop, & Turnbeaugh, 2005), HRM practices (Dunbar, 1993; Goldenhar, Williams, & Swanson, 2003; Griffin & Neal, 2000; Krause, Seymour, & Sloat, 1999; Lingard, 2002; Siu et al., 2003; Turner, Chmiel, & Walls, 2005; Zacharatos et al., 2005; Zohar, 2002b), communication (Hofmann & Stetzer, 1998), organizational structure (Perrow, 1984; Reason, 1990), and work pressure (Brown, Willis, & Prussia, 2000; Clarke, 2006b; DeJoy et al., 2004; Frone, 1998; Hayes et al., 1998; Hofmann & Stetzer, 1996; Mearns et al., 2003; Prussia, Brown, & Willis, 2003; Siu et al., 2003; Turner et al., 2005)

At the individual level of analysis, a useful distinction can be drawn between distal person-related antecedents of safety performance (i.e., relatively stable individual differences), and proximal person-related antecedents (i.e., relatively malleable psychological states more directly related to the context of safety; Christian et al., 2009). In terms of distal factors, studies have revealed mixed evidence for the role of personality in predicting safety outcomes. In particular, conscientiousness generally seems to promote safety performance (e.g., Griffin, Burley, & Neal, 2000; Wallace & Vodanovich, 2003), while neuroticism does so in some, but

not all, cases (Mathews & MacLeod, 1985; Paul & Maiti, 2007; but see Clarke & Robertson, 2005).

Griffin and Neal (2000) identified two proximal person-related antecedents of safety performance: safety knowledge and safety motivation. *Safety knowledge* simply describes the extent of an individual's safety-related knowledge (e.g., of emergency procedures, standards for personal protective equipment, etc.). *Safety motivation* is defined as "an individual's willingness to exert effort to enact safety behaviors and the valence associated with those behaviors" (Neal & Griffin, 2006, p. 947). Models of worker safety performance (e.g., Christian et al., 2009; Griffin & Neal, 2000) typically conceptualize safety motivation as a mechanism through which features of the situation (e.g., safety climate) and more distal person (e.g., personality) influence safety performance. Several empirical studies provide support for these predictions (Griffin & Neal, 2000; Maierhofer, Griffin, & Sheehan, 2000; Mearns, Flin, Gordon, & Fleming, 2001; Neal & Griffin, 2006; Neal, Griffin, & Hart, 2000; Probst & Brubaker, 2001; Varonen & Mattila, 2000; Zacharatos et al., 2005; Zohar & Luria, 2004). In a longitudinal study, Probst and Brubaker (2001) found that one situational factor (job security) and one personal factor (job satisfaction) predicted safety motivation which, in turn, had a positive lagged effect on safety compliance. Meta-analytic evidence indicates a moderate-sized effect of safety motivation on safety performance (including both safety compliance and participation dimensions; Christian et al., 2009).

Understanding motivation is central to explaining behavior, because it clarifies the reasons that drive an individual's actions (Mitchell & Daniels, 2003). Motivation, which refers generally to the psychological processes that direct, energize, and sustain action (Latham & Pinder, 2005), can derive from many different sources (e.g., Herzberg, 1966; Porter & Lawler,

1968; Staw, 1977). However, extant models provide an incomplete picture of the sources from which safety motivation derives. If safety motivation is predicted only by stable individual differences and features of the organizational context, little fluctuation should be observed within individuals. This suggests that employee safety motivation may only be influenced through relatively resource-intensive processes (e.g., personnel selection; job design). In contrast, other research suggests that an individual's safety motivation (and, correspondingly, safety performance), may fluctuate a great deal. For example, healthcare workers' adherence to hand hygiene standards declines over the course of a shift, and as a function of work intensity (Dai, Milkman, Hofmann, & Staats, 2015). This finding is consistent with the effects of fatigue and work demands on motivation more generally (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Inzlicht & Schmeichel, 2012). Simple interventions, including longer breaks between shifts (Dai et al., 2015) and changes to workplace signage (Grant & Hofmann, 2011) have been shown to improve safety performance, presumably without any accompanying change to more distal personal or organizational factors.

If the sources of safety motivation are not fully explicated, the *reasons* underlying safety motivation remain unclear as well. The survey items commonly used to operationalize safety motivation are face valid (e.g., "I feel that it is important to maintain safety at all times;" Neal et al., 2000), but shed little light on the components of this attitude, or how it might relate to other types of motivation. In particular, given that safety performance behaviors are intended to prevent harm, the possibility of overlap between safety motivation and motivation constructs within the ethical domain—including moral motivation (Hannah, Avolio, & May, 2011; Rest, Narvaez, Bebeau, & Thoma, 1999) and prosocial motivation (Batson, 1987; Grant, 2007)—merits investigation.

In sum, existing models identify many important antecedents of safety performance, yet may remain incomplete. In particular, further exploration of the proximal psychological antecedents of safety performance offers a promising avenue for both theory development (i.e., due to the greater emphasis on the distal person in extant work) and practical application (i.e., because psychological states are generally more malleable than dispositional traits or features of the distal organization, and may therefore be influenced more easily through managerial intervention). This dissertation identifies and explores two factors (construal level and ethical decision frame adoption) that may be understood as proximal antecedents, or perhaps components, of safety motivation, and one factor (other-orientation) that may be interpreted as a boundary condition.

CHAPTER 3: ETHICAL DECISION FRAMES

Safety Performance as a Decision

Safety performance, like all voluntary behavior, can be viewed as the outcome of a decision. Assuming complete safety knowledge (Griffin & Neal, 2000), an individual chooses—at each opportunity for safety performance—whether or not to engage in the corresponding behavior. While safety performance behaviors are generally socially desirable, and often considered mandatory in organizations, an individual might nonetheless decide to deviate from safety standards, for a number of possible reasons. Organizational roles often involve conflicting or incompatible expectations (i.e., role conflict; Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), or multiple goals which must be prioritized (Kernan & Lord, 1990; Locke, Smith, Erez, Chah, & Schaffer, 1994). Moreover, workers have finite motivational resources, which are often depleted by the physical, cognitive, and emotional demands of the workplace (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Miller, Galanter, & Pribram, 1960). Under such conditions, the relative salience of goals or expectations often serves as a prioritization heuristic (e.g., Schmidt & DeShon, 2007).

Most organizations value safety, but no organization exists for the sole purpose of avoiding accidents. Workers might therefore tend to view safety performance as a secondary goal, subordinate to task performance. As a result, safety performance behaviors (especially those perceived to be routine or insignificant; Hofmann & Frese, 2011) may appear to be less pressing or urgent than other behavioral expectations that are more clearly related to the

organization's core productive activity, or more directly rewarded (Mento, Cartledge, & Locke, 1980). Thus, safety motivation might lag behind task motivation.

The motivational power of workplace goals is also affected by the perceived discrepancy between the current situation and the desired goal-state, with larger discrepancies motivating more goal-directed effort (Campion & Lord, 1982; but see Kernan & Lord, 1990). Safety is a negative goal, meaning it is defined in terms of the non-occurrence of some outcome (e.g., accidents; Dörner, 1989). Unless an accident is presently taking place, the more distal goal of safety performance (i.e., accident prevention) involves no discrepancy between the current and desired situations, which may limit the strength of safety motivation (relative to the motivation to achieve goals involving greater discrepancies). Thus, particularly in a context of competing expectations or goals, workers may decide not to enact safety performance behaviors.

Construct Background

Decision framing provides a useful conceptual lens for explaining when an individual may be more, or less, likely to prioritize safety performance. Tversky and Kahneman (1981) first defined a decision frame as "the decision-maker's conception of the acts, outcomes, and contingencies associated with a particular choice" (p. 453), and proposed that the same decision may be approached in multiple ways—a departure from traditional, expected utility-based models of decision making. This insight inspired a variety of "naturalistic" decision making theories, which emphasize the context-dependence of decision making processes (e.g., Connolly & Koput, 1997; Klein, 1989; Noble, 1989; Payne, Bettman, & Johnson, 1993).

Building on this earlier work, March (1995) developed the logic of appropriateness theory, a rule-based model of decision making that makes two key assumptions. First, people are assumed to categorize decisions using situational cues (i.e., by answering the question, "What

type of situation is this?"). Second, individual differences (e.g., different social value orientations) lead to systematically different decisions. Rather than calculating and comparing expected utilities for various choices, March (1995) proposed that decision makers simply ask, "What does a person like me do in a situation like this?" According to this perspective, each individual maintains a set of decision frames, each providing rules for appropriate behavior for specific situations (March & Olsen, 2006).

Signaling-processing theory (Messick, 1999; Tenbrunsel & Messick, 1999) employs a similar logic, but stresses the importance of subtle situational cues in determining perceptions of appropriate behavior, applicable norms, what others can be expected to do, and what kinds of attributions can be made about others. Illustrating this insight, one study found that differences in the levels of cooperation observed in social dilemma and bargaining games were explained by the verbs used to describe the games to participants (e.g., "claiming" vs. "accepting;" Larrick & Blount, 1997).

Thus, the *decision frame*, or type of decision an individual perceives, determines the "rules of the game" for decision making—including appropriate behaviors, salient norms, and expectations for others. Messick (1999) proposed that decision frames are particularly relevant for understanding how people approach decisions in situations that have an ethical "tinge." Adopting an *ethical decision frame*, in which ethical considerations, norms, and rules of conduct are salient, should lead to more ethically defensible decisions and behaviors (e.g., prioritizing harm prevention, or fairness). Moreover, situational cues (e.g., the presence or absence of sanctioning systems; Tenbrunsel & Messick, 1999; 2004) may play an especially critical role in determining what decision frame is adopted in ethically ambiguous settings.

In this dissertation, I focus on the question of whether or not (or the extent to which) an individual adopts an ethical decision frame. Other decision frames which have been contrasted with ethical frames in prior research include: business decision frames, which are activated by money-related cues (Kouchaki et al., 2013), and in which norms of profit and self-interest guide decision making (Tenbrunsel & Messick, 1999); economic decision frames, in which "material or pecuniary ends" are the primary consideration (Pillutla & Chen, 1999, p. 84); and personal, legal, and environmental decision frames (Tenbrunsel & Messick, 1999). In the sections that follow, I will first discuss why the context of safety performance might encourage the adoption of ethical decision frames, and then why it also might fail to do so.

The Importance of Harm Perception

Research from the field of moral psychology offers insight into how and why people may adopt ethical decision frames. Rationalist models of moral judgment, based primarily on developmental evidence, dominated moral psychology throughout the twentieth century. According to the rationalist perspective, moral judgment is primarily the product of deliberative reasoning and reflection (Jones, 1991; Kohlberg, 1981; Rest, 1986). Breaking with this tradition, the social intuitionist model (Haidt, 2001) argues instead for the primacy of moral *intuitions*, which are activated unconsciously by the presence of specific situational cues, or moral stimuli. Intuitive models propose that these moral intuitions drive moral judgments, while reasoning and reflection instead serve primarily to provide post hoc justification (Haidt, 2001; Reynolds, 2006; Sonenshein, 2007). The intuitive perspective follows earlier work demonstrating the automaticity of social judgments more generally (e.g., Bargh & Chartrand, 1999; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Greenwald & Banaji, 1995), and is supported by diverse

empirical evidence (e.g., Decety & Cacioppo, 2012; Gray, Schein, & Ward, 2014; Hamlin & Wynn, 2011; Reynolds, Leavitt, & DeCelles, 2010; Schein & Gray, 2015).

The intuitive perspective is consistent with Messick's (1999) emphasis on situational cues. But what cues are most likely to trigger moral intuitions, thereby leading to the adoption of an ethical decision frame? Evidence from several academic literatures suggests that perceived harm (or potential harm) may be uniquely important.

Philosophers of ethics have long affirmed the central role of harm in questions of right and wrong (e.g., Betham 1970/1780; Hume, 1777; Mill, 1861; Singer, 1981). Evidence from developmental psychology (Kohlberg, 1969; Piaget, 1932; Turiel, 1983) shows that harm-related considerations are among the first elements of the "moral mind" to emerge in childhood, and that both children and adults use the presence of suffering as a heuristic to distinguish ethical violations from "conventional" violations (i.e., violations of social norms lacking ethical content; Huebner, Lee, & Hauser, 2010; Turiel, 1983). Harm prevention (i.e., protecting oneself and biological relatives) is thought to explain the evolution of morality (Haidt & Joseph, 2007; Hauser, 2006), and anthropological accounts reveal that harm-related violations are the most universally condemned across cultures (Mead, 1961; Mikhail, 2007; 2009; Shweder, 2012).

In moral psychology, debate persists over the number of intuitive moral stimuli (e.g., Graham, 2015; Gray & Keeney, 2015a; 2015b). Moral foundations theory (MFT; Graham et al., 2013; Haidt, 2007) proposes that at least five distinct considerations may trigger moral judgments: harm, fairness, in-group loyalty, obedience to authority, and purity. In contrast, the theory of dyadic morality (TDM; Gray, Young, & Waytz, 2012; Schein & Gray, 2015; 2017) contends that all ethical considerations are ultimately reducible to the intuitive perception of harm. Whether it is the only moral stimulus or one of several, however, MFT and TDM agree

that perceived harm is a powerful driver of ethical decision making, and accounts for the most typical and universal of moral judgments (Haidt et al., 2015; Schein & Gray, 2017).

TDM also provides a detailed account of *how* perceived harm shapes ethical decision making (Gray, Waytz, & Young, 2012; Gray, Young, & Waytz, 2012). Moral judgment is theorized to be rooted in a cognitive template with three fundamental elements: (1) a suffering patient (i.e., victim); (2) an intentional agent; and (3) interpersonal harm (i.e., the agent's action harming the patient). These elements are therefore the core situational cues that activate ethical decision making processes. Even if one of these cues is not readily apparent in a given situation, it may be automatically inferred from the others in a process known as dyadic completion (Gray et al., 2014). When observing a suffering victim, for example, people perceive wrongdoing by some responsible party. Thus, individuals are likely to judge their own actions (or inactions) as unethical to the extent that they perceive others who may be harmed.

In the context of safety-related decisions, then, there is substantial evidence to suggest that the possibility of harm (e.g., coworkers who may be injured in an accident) may encourage the adoption of an ethical decision frame. However, TDM also specifies that perceptions of harm are subjective (Gray et al., 2014). For example, political liberals and conservatives perceive different degrees of harm in anti-patriotic displays, religious blasphemy, and aberrant sex acts (Schein & Gray, 2015; cf. Graham, Haidt, & Nosek, 2009), and many research participants perceive harm even in scenarios that are carefully crafted to contain no objective harm (e.g., dog-eating; Gray et al., 2014; cf. Haidt, Koller, & Dias, 1993). Of particular importance to the current research, perceptions of harm are sensitive to probability, and to characteristics or perceptions of the potential victim. Actions that are perceived as less likely to cause harm are also less likely to drive moral judgment (Malle, Guglielmo, & Monroe, 2014; Martin & Cushman, 2016). The

amount of harm perceived in a given scenario can also be influenced by factors such as the race (Hoffman, Trawalter, Axt, & Oliver, 2016) perceived deservingness (Weiner, 1993), and number of the victim(s) (Jenni & Loewenstein, 1997).

Barriers to Ethical Decision Frame Adoption

By definition, safety performance decisions invoke a fundamental ethical concern (i.e., harm prevention). However, the subjective nature of harm perception suggests that workers will not necessarily categorize safety-related decisions as ethical decisions. Several lines of research suggest that organizational settings are particularly likely to obscure cues that might otherwise lead to the adoption of an ethical decision frame (Chugh et al., 2005; Tenbrunsel & Messick, 2004; Welsh et al., 2014). Taken together, this work suggests that even well-intentioned people often fail to recognize the ethical issues inherent in their workplace choices and behavior, even when such issues might appear obvious to observers.

The failure of individuals to recognize the ethical implications of their actions is often described in terms of *bounded ethicality* (Banaji & Bhaskar, 2000; Banaji, Bazerman, & Chugh, 2003; Chugh et al., 2005). Following Simon's (1983) work on bounded rationality, the bounded ethicality perspective attempts to explain an apparent puzzle: many people who want to behave ethically, and to view themselves as ethical people, nonetheless engage in unethical behavior. Bounded ethicality has been empirically demonstrated in a variety of contexts, including: over-claiming credit for group work (Caruso, Epley, & Bazerman, 2006), harming future generations in intergenerational dilemmas (Wade-Benzoni, 1999; 2002; 2006), and giving in to corrupting conflicts of interest (Moore, Tetlock, Tanlu, & Bazerman, 2006). In contrast to rationalist theories of moral judgment, which tend to explain unethical behavior in terms of deficiencies of character or moral development (e.g., cognitive moral development; Kohlberg, 1969), the

bounded ethicality perspective aligns with intuitive theories, suggesting that people who fail to perceive ethical cues (e.g., potential harm) may be completely unaware of the unethical decisions they make (Chugh et al., 2005).

Ethical fading (Tenburnsel & Messick, 2004) offers a related perspective, and helps to explain how unethical decision making can escalate. Self-deception processes enable people to make unethical, or self-interested, decisions, while falsely believing that their behavior has upheld ethical principles. Decision makers might deceive themselves by overlooking potential victims, failing to recognize how their actions might cause harm, or denying their own agency or intentions. Over time, the ethical aspects of such decisions "fade" from view altogether, so that the ethical issues at stake are completed obscured. In a similar vein, research documenting the "slippery slope" of unethical behavior suggests that committing (or tolerating) small ethical infractions may, over time, cause people to commit progressively larger unethical acts, as their awareness of the wrongdoing is gradually eroded (Gino & Bazerman, 2009; Welsh et al., 2014).

These perspectives share an important insight: People often fail to recognize when they are making ethical decisions, and the organizational context makes such oversight particularly likely. This insight is also reflected in models of ethical decision making in organizations (e.g., Jones, 1991; Kish-Gephart, Harrison, & Treviño, 2010; Tenbrunsel & Smith-Crowe, 2008), in which ethical or moral awareness is presented as a necessary antecedent (e.g., "For the moral decision-making process to begin, a person must recognize the moral issues;" Jones, 1991, p. 380).

In the context of safety performance, other cognitive errors may further inhibit workers' ability to accurately perceive the harm that might result from non-performance, thereby reducing the likelihood of ethical decision frame adoption. Availability (Tversky & Kahneman, 1974;

Schwarz et al., 1991) is a decision making heuristic in which the ease with which an event comes to mind serves as a cue for its likelihood. Workers who have not recently experienced or witnessed an accident, then, may discount the subjective probability of accident occurrence. Perceiving accidents as less likely may, in turn, cause workers to discount the importance of behaviors aimed at accident-avoidance (e.g., safety performance). Overconfidence bias (Lichtenstein et al., 1982; Moore & Healy, 2008) leads people to underestimate their own fallibility, and overestimate their invulnerability from negative outcomes (e.g., harm). A worker with an accurate overall perception of accident base-rates might still discount the likelihood of such accidents occurring as a result of his or her own decisions, decreasing the likelihood that such decision will be viewed through an ethical frame.

The preceding review provides mixed evidence concerning whether ethical decision frames might automatically be adopted in the context of safety performance. The distal goal of safety performance (harm prevention) is also the situational cue that most reliably activates ethical decision making processes. However, decision makers in organizations are only boundedly rational and ethical, and are often distracted by competing expectations. As a result, they may overlook such cues.

Effects of Ethical Decision Frames

In contrast, the available evidence concerning consequences of ethical decision frame adoption is fairly consistent. While several review papers have highlighted the theoretical value of the ethical decision frame construct (Kreps & Monin, 2011; Tenbrunsel & Messick, 2004; Tenbrunsel & Smith-Crowe, 2008), few empirical investigations to date have tested the effects of ethical decision frames directly. In one exception, a scenario-based experiment involving pollution decisions in a manufacturing setting, participants who adopted an ethical decision

frame were more likely to invest in pollution controls than those who adopted a business decision frame (Tenbrunsel & Messick, 1999, Study 3). Other findings indicate that "non-ethical" decision frames—including business, economic, and instrumental frames—lead to less ethical outcomes, including: deception of fellow participants in laboratory studies (Kouchaki et al., 2013, Study 3), more competitive (vs. cooperative) behavior in social dilemma games (Pillutla & Chen, 1999), and less disciplining of followers' ethical transgressions by leaders (Desmet, Hoogervorst, & Van Dijke, 2015). These findings are reinforced by other evidence suggesting that exposure to business environments or strategies promotes unethical and selfish behavior (e.g., Bennett, Pierce, Snyder, & Toffell, 2013; Malhotra & Gino, 2011).

Despite the paucity of studies examining ethical decision frames specifically, several closely related constructs have been investigated more extensively. *Moral awareness* refers to a decision maker's awareness, or recognition, that a given decision involves ethical considerations (Tenbrunsel & Smith-Crowe, 2008). Moral awareness is either explicitly included (Hunt & Vitell, 1986; Jones, 1991; Rest, 1986), or implied (Ferrell & Gresham, 1985; Treviño, 1986), in several foundational models of ethical decision making in organizations. These theories suggest that moral awareness is a necessary condition for ethical decision making and behavior—if decision makers are not morally aware, their decision making process cannot be described as ethical. While this account is derived from the rationalist tradition, it is equally compatible with an intuitive perspective, in which moral awareness results from the unconscious recognition of moral stimuli (e.g., Haidt, 2001). It is also supported by more recent evidence documenting bounded ethicality (Chugh et al., 2005) and ethical fading (Tenbrunsel & Messick, 2004), which suggests that much of the unethical decision making observed in organizations results from ethical *un*awareness.

Several empirical studies have directly tested the effects of moral awareness on ethical judgments and intentions. These findings generally support positive effects of moral awareness on ethical judgment (e.g., Fleischman & Valentine, 2003; Singhapakdi et al., 1996; but see Valentine & Fleischman, 2003) and, more consistently, on ethical intentions (e.g., Singhapakdi, 1999; Singhapakdi et al., 2000; Singhapakdi et al., 1999). In one study of marketing industry professionals, Singhapakdi and colleagues (1996) found that moral awareness significantly predicted respondents' judgments that wrongdoing had occurred in a series of ambiguous, industry-specific, vignettes.

In their review of the ethical decision making literature, Tenbrunsel and Smith-Crowe (2008) proposed an integration of moral awareness with ethical and non-ethical decisions frames. Decision makers who adopt an ethical decision frame are morally aware—these concepts are effectively synonymous. Decision makers who adopt non-ethical decision frames are morally unaware—and here the two constructs may be more meaningfully distinguished. Moral unawareness that stems, for example, from the adoption of a business decision frame may differ substantively from moral unawareness stemming from the adoption of a personal decision frame. Tenbrunsel and Smith-Crowe (2008) also argued that, while moral awareness may be necessary for ethical decision making, it is not sufficient. This logic suggests that moral awareness (or ethical decision frame adoption) increases the likelihood that a decision maker will make an ethical choice, but does not guarantee this outcome.

Evidence from moral psychology, particularly involving the constructs of moral conviction and moralization, may also speak to the possible effects of ethical decision frames. Moral philosophers (e.g., Boyd, 1988; McDowell, 1979; Moore, 1903; Sturgeon, 1985) and psychologists (e.g., Turiel, 1983) argue that moral considerations are of a unique, special class,

qualitatively distinct from "conventional" considerations, and may accordingly have different motivational and behavioral effects. *Moral conviction* refers to an individual's subjective belief that something is fundamentally right or wrong (Skitka, 2002). An individual who views an issue in terms of moral convictions is said to *moralize* the issue (Rozin, 1999). Attitudes held with strong moral conviction may be referred to as *moral mandates* (Sitka et al., 2005).

Compared to other strong attitudes (i.e., perceived in terms of "desirable vs. undesirable," rather than "right vs. wrong"), moral mandates lead to deeper commitment, and stronger emotional (Haidt, 2001; Shweder, 2012) and behavioral (Skitka et al., 2005; Skitka & Mullen, 2002) responses. For example, Skitka and colleagues (2005) found that stronger moral conviction led to increased intolerance, reduced cooperativeness, and greater inability to resolve disagreements in interactions between individuals holding dissimilar attitudes. Related work suggests that people often hold morally-laden "sacred values" (e.g., honor, justice, life), and vehemently condemn decisions and behaviors that involve tradeoffs between these values and more "profane" outcomes (e.g., placing a price on human life; Fiske & Tetlock, 1997; Tetlock, Kristel, Elson, Green, & Lerner, 2000).

Applied to the context of safety-related decision making, these findings suggest that, if a worker perceives a given decision in terms of moral right and wrong (i.e., adopts an ethical decision frame), he or she will be particularly committed to the right (i.e., safety-promoting) choice. This may result in reduced flexibility with regard to safety standards and, importantly, less willingness to tradeoff safety performance against other, more "profane," behavioral standards (e.g., task performance) when role conflict arises. In a non-moral decision frame (e.g., a business frame), a worker might be more willing to subordinate safety performance to task-

related demands, so long as the latter more directly relates to the organization's profitability, or to the worker's own rewards.

Moralization is often the result of group- or societal-level processes that unfold over long spans of time (Rozin, 1999; Shweder, 2012). However, the social intuitionist perspective (Haidt, 2001) suggests that, at the individual level, moral conviction can also emerge rapidly and automatically, in response to specific situational cues (i.e., moral stimuli). Evidence for a series of studies by Van Bavel and colleagues (2012) supports this interpretation. Participants evaluated a set of actions in either moral (i.e., morally good vs. bad) or non-moral (i.e., pragmatically good vs. bad) terms. Participants' moral evaluations were faster, more extreme, and more strongly associated with universal prescriptions than non-moral evaluations of the same action—findings all indicative of greater moral conviction (Skitka et al., 2005). Thus, the moralization of a given action is not necessarily the result of attitudes an individual has held over a long period of time, or received from the culture to which he or she belongs. Moralization can also occur almost instantaneously, in response to subtle situational cues.

To summarize, while few direct tests of ethical decision frame effects have been conducted to date, the organizational literature on ethical awareness, and psychological literature on moral conviction and moralization, both provide substantial evidence to suggest that the adoption of an ethical decision frame will lead to more ethical choices and behaviors. In the context of safety-related decisions, I have proposed that a worker adopts an ethical decision frame when he or she recognizes that the decision is an ethical one (i.e., involves the ethical consideration of harm prevention). However, this phenomenon might also be reasonably interpreted in terms of ethical awareness, or moralization, of workplace safety. Based on these

sources of evidence, I predict the following:

Hypothesis 1. *In the context of safety-related decisions, adoption of an ethical decision frame will lead to increased safety performance.*

CHAPTER 4: CONSTRUAL LEVEL THEORY

My review of the literature to this point suggests that ethical decision frame adoption offers a potentially effective means of increasing safety performance but, for a variety of reasons, workers may overlook the ethical content of safety performance. I next turn to the literature on construal level theory, which offers a potential solution to this dilemma.

Theoretical Background

Construal level theory (CLT; Trope & Liberman, 2003; 2010) provides a conceptual model detailing how context shapes cognition, judgment, and behavior. CLT's origins can be traced to earlier theories of categorization (Rosch & Lloyd, 1978), concept formation (Medin & Smith, 1984), and action identification (Vallacher & Wegner, 1987; 1989). The overarching insight of CLT is that the mindset, or mental representation, through which an individual conceptualizes a given target (e.g., an object, person, event, or action) varies along a continuum of abstraction. At higher (i.e., more abstract) levels of construal, objects are perceived in terms of broad or primary features, people are perceived in terms of dispositional traits and group membership, events are perceived in terms of causes, and actions are perceived in terms of desirability and underlying goals (*why* the action is performed). At lower (i.e., more concrete) levels of construal, in contrast, objects are perceived in terms of details and secondary features, people are perceived in terms of individuating characteristics and contextually-determined behaviors, events are perceived in terms of effects, and actions are perceived in terms of feasibility and situational considerations (*how* the action is performed; Liberman & Trope, 1998).

To illustrate this distinction, consider a researcher deciding whether to attend a particular conference. In a higher-level construal mindset, the researcher might focus on the value assigned to his or her superordinate goals for attending (e.g., learning new things; networking with colleagues). In a lower-level construal mindset, the researcher might instead focus on the logistical challenges inherent in attending (e.g., making travel plans; rescheduling other commitments). Upon arrival at the conference, the researcher might conceptualize the action of attending a presentation as "acquiring new knowledge" (higher-level construal), or "sitting in a chair and taking notes" (lower-level construal).

Construal level is highly variable, both between individuals (i.e., different researchers might conceptualize attending the same conference at different levels of abstraction), and within individuals (i.e., the same researcher might conceptualize two different conferences at different levels of abstraction, or might conceptualize the *same* conference at different levels of abstraction at different points in time; Liberman & Trope, 2014).

Literature Review

Early research in this tradition drew on temporal construal theory—which holds that people conceptualize the distant future in more abstract, high-level terms than the near future—to better understand how people make plans and choices pertaining to the future. Temporal construal theory was applied to help explain intertemporal choices (Ainslie, 1975; Thaler, 1981; Loewenstein & Prelec, 1992), delayed gratification (Mischel, 1974), the planning fallacy (Gilovich, Kerr, & Medvec, 1993), and prediction psychology (Kahneman & Tversky, 1973).

Building on this work, Trope and Liberman (2003) proposed that, by adopting a higher-level mindset, people are able to traverse psychological distance—or mentally "time travel"—in order to perceive temporally distant events (i.e., those occurring in the distant future or past).

Subsequent research moved beyond temporal construal to identify other instances in which high-level construal facilitates the traversing of psychological distance, such as when an object or event is far away in space or geography (spatial distance; e.g., Henderson, Fujita, Trope, & Liberman, 2006), happens to others (social distance; e.g., Wakslak, Nussbaum, Liberman, & Trope, 2008), or seems unlikely to occur (hypothetical distance; e.g., Liberman & Förster, 2009).

These insights were integrated into the broader construal level theory of psychological distance (CLT; Trope & Liberman, 2010). According to CLT, an increase in any of the four psychological distances (temporal, spatial, social, and hypothetical) results in a higher level of construal. These distances are inferred from one another and therefore interrelated, such that an increase (or decrease) in one distance leads to a corresponding change in the others (Liberman & Trope, 2014). In one study, for example, landscape photographs conveying a sense of spatial nearness (vs. distance), increased the relative accessibility of words related to temporal nearness (e.g., "tomorrow" vs. "next year;" Bar-Anan et al., 2007). Additionally, the relationship between construal level and psychological distance is itself reciprocal, such that greater psychological distances are inferred in higher-level construal mindsets, and vice-versa (Schwarz & Clore, 1996; Trope & Liberman, 2010). Dozens of psychological experiments have provided support for these predictions, utilizing a variety of designs and stimuli (for reviews, see Liberman & Trope, 2008; 2014; Trope & Liberman, 2003; 2010).

In recent years, CLT has increasingly been applied in organizational research, because it provides a well-validated conceptual framework for understanding organizationally-relevant differences in mindset. For example: strategy (higher-level construal) vs. tactics (lower-level construal); or vision (higher-level construal) vs. execution (lower-level construal; Reyt, Wiesenfeld, & Trope, 2016; for a review, see Wiesenfeld, Reyt, Brockner, & Trope, 2017). In

the organizational behavior literature, applications of CLT have shed new light on a variety of topics, including: workplace incivility (Rosen, Koopman, Gabriel, & Johnson, 2016), organizational justice (Brockner, Wiesenfeld, Siegel, Bobocel, & Liu, 2015; Cojuharenco, Patient, & Bashshur, 2011; Mentovich, Yudkin, Tyler, & Trope, 2016; Rizvi & Bobcel, 2015), organizational learning and innovation (Reyt & Wiesenfeld, 2015), communication (Joshi & Wakslak, 2014; Joshi, Wakslak, Raj, & Trope, 2016), leadership (Berson & Halevy, 2014; Berson, Halevy, Shamir, & Erez, 2015), advice taking (Reyt, Wiesenfeld, & Trope, 2016), negotiation (De Dreu, Giacomantonio, Shalvi, & Sligte, 2009; Henderson & Trope, 2009), and power (Joshi & Fast, 2013; Lammers, Galinsky, Gordijn, & Otten, 2012).

Construal Level, Ethical Decision Making, and Safety Performance

Turning to the literature on construal level in the contexts of decision making and self-regulation, the current balance of evidence seems to suggest that higher levels of construal will lead to more desirable outcomes. Higher levels of construal have been shown to increase self-control, in contexts ranging from delaying the gratification of a tasty dessert (Metcalfe & Mischel, 1999; Mischel, Shoda, & Rodriguez, 1989), to persisting in holding onto a handgrip in the laboratory (Fujita, Trope, Liberman, & Levin-Sagi, 2006), to maintaining a polite demeanor after experiencing incivility in the workplace (Rosen et al., 2016). In resource allocation decisions, participants assigned to a high-level (vs. low-level) construal condition were more likely to make decisions that maximized collective outcomes (Stillman, Fujita, & Sheldon, 2016). Survey respondents reported behavioral intentions more congruent with their own core values when primed to focus on the distant (vs. near) future (Eyal, Sagristano, Trope, Liberman, & Chaiken, 2009). Similarly, in studies of “want vs. should” conflicts, more psychologically near events were shown to activate “want” motivations, focused on the decision maker’s immediate

self-interest, while more psychologically distant events instead tended to activate "should" motivations, focused on the decision maker's long-term interests and values (Milkman, Rogers, & Bazerman, 2008; Rogers & Bazerman, 2008).

Several studies have produced similar results for decision making in the ethical domain. In scenario-based studies, research participants judged others' unethical behaviors more harshly when those behaviors were imagined from a more psychologically distant (vs. near) perspective (Eyal et al., 2008; Yan & Lou 2013). Participants also reported greater willingness to engage in prosocial behaviors (e.g., volunteering to help a student in need) when those behaviors were described as taking place in the distant (vs. near) future (Agerström & Björklund, 2009; Eyal et al., 2009). More generally, Tenbrunsel and colleagues (2010) argued that lower levels of construal, by making immediate needs salient, may reduce decision makers' sensitivity to more abstract ethical considerations.

This evidence might seem to suggest that higher levels of construal will also promote ethical decision making processes (i.e., ethical frame adoption), and desirable behaviors (i.e., safety performance) in the context of workplace safety. However, the generalizability of these findings may be limited by two distinguishing features of safety-related decisions. First, safety is a negative goal (i.e., defined in terms of the non-occurrence of some event, such as an accident; Dörner, 1989). Second, as argued above, the ethical content of safety performance decisions will be detected intuitively (i.e., by perceiving potential harm), rather than by deliberatively applying ethical principles. Prior work suggests that higher levels of construal facilitate behavior that promotes future goals (e.g., delaying gratification; favoring "should" over "want"), or abstract commitments (e.g., core values; broad ethical principles). But, are these findings applicable to

behaviors that instead involve preventing undesirable outcomes, or responding to specific, situationally-embedded cues?

According to the compatibility principle (Ajzen & Fishbein, 1977), attitudes (and other forms of cognition) predict behaviors to the extent that an attitude and behavior are at comparable levels of specificity. Recent work has applied this logic directly to CLT, introducing the concept of *construal fit* (Berson & Halevy, 2014; Berson, Halevy, Shamir, & Erez, 2015). One illustration of this phenomenon found that, when the hierarchial difference (i.e., social distance) between leaders and followers is relatively large, followers are more motivated by more abstract (i.e., higher-level construal) leader communication. When the hiearachical difference is small, in contrast, more concrete leader communication elicits more positive follower reactions (Berson & Halevy, 2014). Construal fit is evident when abstract mindsets (i.e., higher levels of construal) predict behavioral intentions for the distant future (e.g., Eyal et al., 2009), or actions that correspond to broad, decontextualized goals (e.g., core values or ethical principles; Eyal et al., 2008). On the other hand, such mindsets may exhibit *misfit* with behaviors that: occur in the immediate or near future; are initiated by situation-specific cues; or focus on maintaining the status quo and preventing negative events (vs. promoting desired future states).

Incompatibility, or construal misfit, may help to explain an apparent puzzle in safety-related decision making: safety perfromance invokes—by definition—a fundamental ethical concern (i.e., harm), yet people do not always perceive safety-related decisions as ethical decisions. Safety performance behaviors are ultimately concerned with the prevention of rare outcomes (i.e., accidents; Zohar, 2000). Cognitive errors such as the availability heuristic (Tversky & Kahneman, 1974) and overconfidence bias (Lichtenstein et al., 1982) may result in those outcomes being perceived as rarer still. In the language of CLT, then, accidents are

hypothetically distant. Given the robust, reciprocal, relationship between construal level and psychological distance (Trope & Liberman, 2010), safety-related decisions should therefore tend to evoke higher levels of construal. Because psychological distances are interrelated (Liberman & Trope, 2014), the hypothetical distance (i.e., rarity) of accidents should correspond to perceptions of related spatial, temporal, and social distances as well. This may help to explain the tendency of workers in safety-critical settings to perceive accidents as "something that happens to other people in other places" (Dörner, 1989).

However, several lines of argument indicate that lower levels of construal (and psychological distance) might be much more conducive to ethical decision frame adoption. Given that harm perceptions are sensitive to probability (Malle et al., 2014; Martin & Cushman, 2016), safety-related decisions will be more likely to trigger decision makers' ethical intuitions when accidents appear more likely to occur. Additionally, in order for potential harm to be perceived as an ethical concern, one must care about the person(s) suffering that harm (i.e., via empathy; Baron-Cohen, 2011; Eisenberg & Miller, 1987). Research on the identifiable victim effect (Small & Loewenstein, 2003) points to a direct link between construal level and caring—people care more for suffering others whom they perceive more concretely (i.e., with more personalizing information). Similarly, many studies have shown that people experience more empathy toward others to whom they feel more psychologically close, and are more likely to prevent or alleviate close others' suffering (e.g., Kanekar, Pinto, & Nazareth, 1990; Rachlin & Jones, 2008; Small & Simonsohn, 2008; Van Boven, Kane, McGraw, & Dale, 2010; Williams & Bargh, 2008).

In sum, I am arguing that decision makers adopt ethical frames in response to specific, situational cues common to safety-related decisions (i.e., perceptions of potential harm).

Increasing the salience of those cues should therefore promote ethical decision frame adoption. Relatedly, some scholars have argued that lower levels of construal have more power to influence judgment and decision making in general, because the more concrete and detailed information available in such mindsets is more salient and "imageable" (Gong & Medin, 2012; Semin & Fiedler, 1988). One recent investigation lends support for this argument in the context of workplace safety (Burke, Salvador, Smith-Crowe, Chan-Serafin, Smith, & Sonesh, 2011). In a meta-analytic review of safety training effects, Burke and colleagues (2011) found evidence of a "dread factor." More engaging safety training (i.e., involving behavioral modeling, simulation, or computer-interface instruction; as opposed to lectures or written materials) increased safety performance by making adverse outcomes more salient, particularly when the potential harm associated with those outcomes was severe (e.g., serious injury, illness, or death). Findings from the CLT literature indicate that words (written or spoken) lead to higher-level construal of their subject than pictures or other representations that bear some visual or physical resemblence to the subject (Amit, Algom, & Trope, 2009; Amit, Algom, Trope, & Liberman, 2008). Thus, the "dread factor" can be interpreted as evidence that lower levels of construal (as activated by more visual or embodied safety training) increase the salience of potential harm and, at least when the severity of that potential harm is high, lead to increased safety performance.

In sum, workers are likely to view safety-related decisions from a relatively high level of construal by default, due to the rarity of accidents and injuries in most organizational settings. However, this tendency will give rise to construal level misfit with respect to ethical decision frame adoption, because higher levels of construal decrease the level and salience of perceived harm. Interventions to lower workers' level of construal might therefore increase the likelihood that they will perceive safety-related decisions as ethical decisions.

Several empirical findings are broadly consistent with this prediction. Regulatory focus theory (Higgins, 1997) argues that, when pursuing goals, people may focus more heavily on promoting positive outcomes (promotion focus), or preventing negative outcomes (prevention focus; Higgins, 1996; Higgins, Roney, Crowe, & Hymes, 1994). The ethical concerns raised by safety-related decisions (i.e., preventing potential harm) are consistent with a prevention focus. In one set of experimental studies, Pennington and Roese (2003) found that lower levels of construal (manipulated via psychological distance) increased participants' consideration of prevention-focused considerations. Correspondingly, prevention focus leads to risk avoidance, and to reduced rates of unethical behavior (Gino & Margolis, 2011).

A few studies provide direct support for a negative effect of construal level on ethical decision making (i.e., lower levels of construal leading to more ethical decision making) in relevant decision contexts. Noting that Eyal and colleagues (2008) manipulated construal level indirectly via temporal distance (scenarios described unethical behaviors occurring in either the near or distant future), Gong and Medin (2012) attempted to replicate their work by instead manipulating construal level directly, with all behaviors described as occurring in the present. Across four studies, *lower* levels of construal were instead associated with greater moral outrage toward others' unethical behavior. These findings are consistent with the compatibility-based argument that, all else equal, lower levels of construal provide better "fit" for outcomes that pertain to the here and now. Lastly, in a cross-sectional study of airport workers, Keeney and Hofmann (2016) found a significant, negative correlation between workers' construal of safety (coded from open-ended essays), and the extent to which they perceived ethical considerations to

be involved in various safety behaviors. Thus:

> ***Hypothesis 2***. *In the context of safety-related decisions, lower levels of construal will increase the likelihood (or extent) of ethical decision frame adoption.*

CHAPTER 5: OTHER-ORIENTATION VS. SELF-INTEREST

Construct Background

The hypothesized link between construal level and the ethical framing of safety-related decisions is rooted in the perception of potential harm, which should appear more probable and salient at lower levels of construal. To this point, I have focused on perceptions of interpersonal, or other-oriented, harm. "Interpersonal" is defined broadly here to include coworkers, customers, and other stakeholders—any individual other than the decision maker him- or herself. However, many safety-related decisions also involve the potential for *personal* harm (i.e., harm to the self).

While all safety performance behaviors are intended to prevent harm, the potential for other-oriented harm prevention may be more apparent for certain behaviors, while personal harm prevention is more apparent for others. In Burke and colleagues' (2002) framework, for example, use of personal protective equipment might be more readily associated with personal harm prevention; communicating health and safety information (e.g., "Engages in the appropriate methods to notify workers, supervisors, and/or emergency coordinators of emergency conditions") might be more readily associated with other-oriented harm perception; and engaging in work practices to reduce risk (e.g., "Properly disposes of materials and/or equipment that pose a health risk") might balance these considerations.

Safety climate research (e.g., Hofmann & Stetzer, 1996, 1998; Zohar, 1980, 2000) suggests a somewhat different perspective: All safety performance behaviors can be seen as preventing other-oriented harm, because they contribute to the shared perception that safe performance is expected, rewarded, and valued in the organization or group. For example,

workers who use the appropriate personal protective equipment for a task are not only protecting themselves, but also other employees (e.g., newcomers) for whom they are modeling safe behavior. On the other hand, it may also be possible to view most—if not all—safety performance behaviors in terms of personal harm prevention. The importance of self-interest as a driver of human behavior, and organizational behavior more specifically, has been demonstrated across an incredibly wide range of contexts (Cropanzano, Goldman, & Folger, 2005; Miller, 1999; Rocha & Ghoshal, 2006). Even for safety performance behaviors that ostensibly pertain to other-oriented harm (e.g., communicating potential safety hazards to others), a decision maker might focus instead on the possibility of personal harm (e.g., loss of professional or social standing; reciprocated non-performance by coworkers).

In short, a decision maker's construal level should predict the *amount* of harm perceived, but the extent to which harm perceptions are other-oriented (or personal) may independently vary. Experiencing more other-oriented harm perceptions indicates higher levels of *other-orientation*, a more general construct referring to an individual's propensity to be concerned for other people (Meglino & Korsgaard, 2004). Like self-interest, other-orientation helps to explain a variety of organizational outcomes, including job attitudes (Meglino & Korsgaard, 2007), reactions to performance feedback (Korsgaard, Meglino, & Lester, 1997; Korsgaard, Meglino, & Lester, 2004), dispute resolution (Rubin, Pruitt, & Kim, 1994), and leader behaviors (Blake & Mouton, 1964). Other-orientation appears to be particularly influential in the context of extra-role behaviors related to helping others at work (e.g., prosocial or organizational citizenship behaviors; Korsgaard, Meglino, & Lester, 1996; Korsgaard, Meglino, Lester, & Jeong, 2010; Lester, Meglino, & Korsgaard, 2008; McNeely, 1991; McNeely & Meglino, 1994). In one field study, for example, other-orientation was shown to predict such behaviors more reliably than

several related constructs, including dispositional empathy and social value orientation (McNeely, 1991). In other studies, other-orientation has been shown to function as an enhancing moderator for various extra-role behavior antecedents (i.e., the effects of the antecedents are stronger at higher levels of other-orientation), including positive affect (Korsgaard et al., 1996), reciprocity expectations (Korsgaard et al., 2010), and job satisfaction (Lester et al., 2010).

Other-orientation is positively associated with dispositional empathy (Batson, 1998), perspective taking ability (Davis, 1983), and agreeableness (Graziano, Jensen-Campbell, & Hair, 1996), and overlaps conceptually with concern for others (McNeely & Meglino, 1994; Ravlin & Meglino, 1987), prosocial motivation (Grant, 2008), prosocial values (Rioux & Penner, 2001), and prosocial personality (Penner, Fritzsche, Craiger, & Freifeld, 1995). The nature of the relationship between other-orientation and self-interest, however, remains a topic of open debate. Across a variety of academic disciplines, the prevailing assumption has long been that other-orientation and self-interest represent opposite ends of a bipolar continuum (see Cropanzano et al., 2005). In this view, higher other-orientation necessarily implies lower self-interest. The theory of other-orientation (Meglino & Korsgaard, 2004, 2007) follows in this tradition, integrating motivational orientations (self vs. other) with judgment processes (rational vs. heuristic) to explain individual behavior. The core logic of the theory is that the behavior of people higher in other-orientation is relatively sensitive to social influence, while the behavior of people higher in self-orientation is driven more by rational and self-interested processes (e.g., cost-benefit analysis; Meglino & Korsgaard, 2004). This perspective is broadly consistent with theories of self-determination (Deci & Ryan, 1985) and individualism-collectivism (Markus & Kitayama, 1991), which suggest that people view themselves in terms of a similar continuum, ranging from independent and autonomous, to highly interdependent with others.

De Dreu (2006) challenged this view, and instead proposed the self-concern and other-orientation as moderators (SCOOM) hypothesis (De Dreu & Nauta, 2009). The SCOOM hypothesis conceptualizes other-orientation and self-interest as independent, unipolar, and orthogonal dimensions. For workplace behavioral outcomes (e.g., job performance, prosocial behavior), self-interest is predicted to enhance the effects of individual-level antecedents (e.g., job characteristics), and other-orientation is predicted to enhance the effects of group-level antecedents (e.g., group climate). While only a few published studies to date have directly tested this framework, results of those efforts are largely consistent with SCOOM predictions (Bobocel, 2013; De Dreu & Nauta, 2009).

While reconciling the theory of other-orientation with the SCOOM model may represent an important direction for future inquiry, it lies well beyond the scope of the current research. Whatever the more general relationship between other-orientation and self-interest may be, in the context of safety-related decision making they are best conceptualized in terms of a single continuum. As argued above, the *amount* of harm perceived in this context is a function of an individual's level of construal. Other-orientation, then, determines the extent to which these perceptions involve harm to others. If harm perceptions must be either other-oriented or self-oriented, individuals who are lower in other-orientation must necessarily perceive more self-oriented, or personal, harm, and can therefore be reasonably described as more self-interested.

The extent to which other-orientation should be considered a trait (vs. state) construct is another important conceptual consideration. If other-orientation is a malleable psychological state, readily influenced by priming effects, it may not be possible to conceptually or empirically distinguish from construal level. Illustrating this concern, several findings demonstrate that state-

level correlates of other-orientation (e.g., empathic concern; Small & Loewenstein, 2008) may co-vary with construal level (via social distance).

In most of the extant literature, however, other-orientation is described as a stable, if not dispositional, individual difference (i.e., a trait; George, 1991). A recent review of the prosocial motivation literature concluded that, while prosocial motivation can be a trait or state, applications of other-orientation reflect a predominantly trait-like construct (Bolino & Grant, 2016). At least one discussion of other-orientation does suggest that the construct may include both trait and state components (Korsgaard et al., 2010). However, the state components described in this account involve observable contextual factors, such as group membership (Penner, Dovidio, Piliavin, & Schroeder, 2005), and other-orientedness of work tasks (Smeesters, Wheeler, & Kay, 2009). These factors are unlikely to be affected by changes in construal level. *Perceptions* of objective features of the work environment may be influenced by changes in an individual's level of construal, but not the features themselves. Thus, treating construal level and other-orientation as independent, orthogonal, constructs appears to be an appropriate choice.

Other-Orientation as a Moderator

Hypothesis 2 predicts a main effect of construal level on ethical decision frame adoption. At lower levels of construal, harmful safety outcomes (i.e., accidents) will appear more probable and vivid, encouraging decision makers to recognize the ethical implications of their choices. At higher levels of construal, in contrast, possible harm will appear more distal and less salient, leading safety decisions to be categorized in non-ethical terms (e.g., as business, personal, or legal decisions).

As explained above, however, this account is based on the assumption of *interpersonal* harm. In practice, decision makers might also—or instead—perceive potential personal harm. Drawing on the theory of other-orientation (Meglino & Korsgaard, 2004, 2007), differences in motivational orientation can be modeled to provide a more complete explanation of the construal level-ethical decision frame link.

When other-orientation is high, the effect of construal level on ethical decision frame adoption should be particularly strong. People high in other-orientation exhibit greater concern, or caring, for others (Korsgaard et al., 2010). Caring for (potential) victims of suffering is an important component of moral judgment (Baron-Cohen, 2011; Eisenberg & Miller, 1987), suggesting that high other-orientation might pre-dispose an individual to recognize the ethical content of safety-related decisions. At lower levels of construal, this predisposition should have the greater impact. Harmful outcomes (i.e., accidents) are perceived to be particularly likely, and potential victims are perceived to be interpersonally closer, increasing the ethical intensity of the situation.

At higher levels of construal, in contrast, accidents are perceived as less likely, and potential victims of those accidents as more socially distant. These tendencies may reduce, or even eliminate, the benefits of other-orientation, by reducing situation-specific caring. General concern for the well-being of others may not translate to ethical decision frame adoption if no threat to others' well-being is perceived (i.e., because the probability of an accident is perceived to be vanishingly small), or if the specific others at risk do not arouse empathic concern (i.e., because they are perceived from great social distance). Based on this logic, I predict that the effect of construal level on ethical decision frame adoption will be particularly strong at high

levels of other-orientation—other-orientation will increase the degree of ethical framing at lower levels of construal, but will not have a comparable effect at higher levels of construal.

When other-orientation is low (or, alternatively, when self-interest is high), ethical decision framing may be more generally inhibited. Highly self-interested people are guided primarily by costs and benefits to the self in their decision making (i.e., as opposed to concern for others; Meglino & Korsgaard, 2007). In making safety-related decision, then, self-interested people will be more sensitive to the possibility that they themselves might be harmed in the event of an accident.

When other-orientation is only moderately low (i.e., people focus more on potential harm to the self, but perceive at least some potential harm to others as well), a significant attenuation of the construal level-ethical decision frame effect should be observed. Lower levels of construal will still increase the likelihood of ethical decision frame adoption somewhat, by increasing the perceived likelihood of accidents and the interpersonal nearness of potential victims. However, this effect should be much weaker under low (vs. high) other-orientation, because the individual's focus on self-interest will tend to crowd out any ethical considerations involved in a decision (i.e., empathic concern for others; Korsgaard et al., 2010). This crowding out of ethical considerations should also be applicable at higher levels of construal. However, higher levels of construal are predicted to result in minimal ethical framing even under *high* other-orientation. Thus, the absolute "cost" of low (vs. high) other-orientation should be much greater at lower levels of construal.

Integrating the preceding discussion suggests that other-orientation will function as an enhancing moderator for the (negative) effect of construal level on ethical decision frame adoption. The effect should be particularly strong at higher levels of other-orientation, and

weaker (or non-existent) at lower levels of other-orientation. This prediction is broadly consistent with prior work in which other-orientation has been shown to moderate the effects of various attitudes (e.g., job satisfaction; Lester et al., 2008) and other psychological states (e.g., positive affect; Korsgaard et al., 1996) on dependent variables that involve helping or caring for others (e.g., prosocial behaviors; Korsgaard et al., 1996; Korsgaard et al., 2010; Lester et al., 2010). Thus:

> ***Hypothesis 3.*** *In the context of safety-related decisions, other-orientation will moderate the negative effect of construal level on the likelihood (or extent) of ethical decision frame adoption. At higher levels of other-orientation, this effect will be enhanced (i.e., become more strongly negative). At lower levels of other-orientation, this effect will be attenuated (i.e., become more weakly negative, or non-significant).*

When combined, Hypotheses 1-3 are consistent with a conditional indirect effect, or moderated mediation, model (Edwards & Lambert, 2007). Hypothesis 4 states this conditional indirect effect prediction, and can be interpreted as holistic statement of the complete theoretical model depicted in Figure 1.

> ***Hypothesis 4***. *In the context of safety-related decisions, the indirect effect of construal level on safety performance via ethical decision frame adoption will be conditional upon the level of other-orientation. At higher levels of other orientation, the (negative) indirect effect of construal level will be strong. At lower levels of other orientation, the indirect effect of construal level will be weak, or non-significant.*

CHAPTER 6: METHODOLOGICAL APPROACH

Overview of Studies

The current research consists of three empirical studies designed to provide a complete and rigorous test of the theoretical model depicted in Figure 1. These studies complement one another, taking advantage of diverse methodologies, research populations, and approaches to operationalizing the model variables. This strategy (i.e., methodological triangulation; Denzin, 1978) allows for greater confidence in the validity and replicability of empirical findings.

Study 1 tested the link between construal level and ethical decision frame adoption in an explicitly safety-related context (Hypothesis 2). This was achieved through a quasi-experimental survey study, completed by employees of an offshore drilling organization. Study 2 was a multi-round simulation study, which was conducted in the laboratory and included a between-subjects manipulation of the independent variable. Control and random assignment provided internal validity, but Study 2 also demonstrated external validity, as participants were required to make a series of complex, ambiguous decisions in a simulation (and physical environment) carefully designed to evoke a specific organizational context. Study 2 included a behavioral outcome measure, and allowed for tests of Hypotheses 1-3. Study 3 was a relatively straightforward laboratory experiment, in which both the independent variable and hypothesized moderator were manipulated between-subjects, providing a controlled, holistic, test of the complete theoretical model depicted in Figure 1 (Hypotheses 1-4).

Measurement Strategy

Construal level. Construal level is best understood in terms of a continuum of abstraction, rather than a categorical distinction between high- and low-level construal (Liberman & Trope, 2014; Trope & Liberman, 2010). The preceding hypotheses are stated accordingly. In Studies 1-3, however, construal level is manipulated with two levels (high vs. low), and results are interpreted in terms of contrasts between the high- and low-level conditions. This methodological choice is consistent with the overwhelming majority of studies in which construal level is included as an independent variable (for a review, see Trope & Liberman, 2010), and offers several advantages. First, manipulation with random assignment to levels of the independent variable offers greater experimental control and internal validity. Second, because I have theorized that safety-related decisions will tend to promote higher levels of construal, measuring natural variation in construal level might result in range restriction. Third, this approach directly tests the practical utility of construal-based interventions, as managers might employ similar methods to "nudge" employee behavior. Finally, while several manipulations of construal level have been developed and validated in prior research, I am aware of no scale-based measure of construal level that can be reliably applied across contexts. Potential limitations resulting from this methodological choice are noted in the general discussion.

Ethical decision frame. In some prior work (Tenbrunsel & Messick, 1999), decision frame adoption has been operationalized categorically. This approach is consistent with logic of appropriateness theory (Messick, 1999), in which decision frames are conceptualized as discrete sets of decision making rules for specific contexts. In other words, a decision maker either adopts, or does not adopt, an ethical frame. However, related research involving moral awareness (e.g., Singhapakdi et al., 1996) and moral conviction (e.g., Skitka et al., 2005) relies on

continuous (i.e., rating scale) measures to operationalize these constructs, and some scholars have more recently suggested that similarly meaningful differences may exist in the *degree* to which an individual adopts an ethical frame (Kreps & Monin, 2011). Because dichotomization of continuous or graduated variables artificially reduces statistical power and variance accounted for (Cohen, 1983), I used rating-scale measures of ethical decision frame adoption in Studies 1-3. However, I also included a dichotomous measure (followed Tenbrunsel & Messick, 1999) in Studies 2-3, to allow for comparison between these two approaches.

Other-orientation vs. Self-interest. Debate persists as to whether other-orientation and self-interest should be treated as endpoints of a bipolar continuum (following the theory of other-orientation; Meglino & Korsgaard, 2004, 2007), or as distinct, orthogonal, constructs (following the self-concern and other-orientation as moderators hypothesis; De Dreu & Nauta, 2009). In Study 2, I used a measure adapted from prior work (Bobocel, 2013; De Dreu & Nauta, 2009), including multiple items corresponding to both other-orientation and self-interest. These items could therefore be aggregated completely to form a single measure (following Meglino & Korsgaard, 2004), or analyzed separately (following De Dreu & Nauta, 2009).

In Study 3, I manipulated other-orientation versus self-interest. Similar manipulations have been used both in studies that conceptualize these variables in terms of a single continuum (e.g., Korsgaard et al., 2010), and in studies in which they are regarded as distinct constructs or treatments (e.g., Grant & Hofmann, 2011). I also included the same rating-scale measure from Study 2 (as a manipulation check), and two separate implicit measures. As in Study 2, the inclusion of multiple measures allowed me to compare alternative approaches to conceptualizing these variables (i.e., bipolar continuum vs. orthogonal constructs).

CHAPTER 7: STUDY 1

Method

Study 1 was conducted at the training center of a large offshore drilling organization based in the Southeastern U.S. Participants were current employees taking part in a routine training course. During a break in the training schedule, employees were invited to participate in a brief, voluntary study.

Participants

Seventy-four employees elected to participate in the study. All participants were men, and the mean age was 37.9 years (*SD* = 7.8). Participants represented a wide range of roles in the organization, from "roughneck" to "rig manager"—the lowest- and highest-ranking positions on an offshore drilling vessel, respectively. Participants averaged 4.8 years (*SD* = 4.1) in their current position, 12.9 years (*SD* = 8.0) with the organization, and 15.4 years (*SD* = 8.6) in the offshore drilling industry. In terms of education, 18.9 percent of participants had earned a bachelor's degree, 2.7 percent had earned a vocational or technical degree, 25.7 percent had completed some college, 48.7 percent had earned a high school diploma (or equivalent), and 4 percent had not completed high school.

Procedure

Participants were randomly assigned to conditions in a single-factor[1] between-subjects design, with two levels of the manipulated variable (construal level: low vs. high). The

[1] Study 1 also included a between-subjects manipulation of time pressure (low vs. high). Participants were asked to "Imagine it is a very busy [relatively slow] day on the rig." However, this manipulation was embedded in the instructions for a measure not reported in the current research (safety role definitions), and did not significantly

manipulation involved two steps. First, participants were presented with a series of three photographs, and asked to write a few words about what they observed in each. The photographs varied by condition. Participants in the low-level construal condition were presented with photographs of specific workstations aboard the company's drilling vessels, while participants in the high-level construal condition were instead presented with "bird's eye" photos of the entire vessels. This manipulation is consistent with prior research linking construal to spatial location (e.g., Bar-Anan et al., 2006; Bar-Anan et al., 2007), and with the "trees" (low-level construal) vs. "forest" (high-level construal) metaphor commonly invoked by construal level theorists (e.g., Henderson & Trope, 2009; Smith & Trope, 2006; Wakslak, Trope, Liberman, & Alony, 2006).

Second, participants completed an open-ended writing task, in which they were asked to write a brief essay about safety in their workplace. Participants in the low-level construal condition were asked to "provide 3-4 thoughts as to *how* employees might make safety in the workplace a priority," while participants in the high-level construal condition were asked to "provide 3-4 thoughts as to *why* employees might make safety in the workplace a priority." This manipulation reflects the foundational argument that, for actions, low-level construal leads one to focus on subordinate means (i.e., how the action is performed), while high-level construal leads one to focus on superordinate purpose (i.e., why the action is performed; Fujita, Henderson, Eng, Trope, & Liberman, 2006; Liberman & Trope, 1998; Vallacher & Wegner, 1989). These essays were coded to test the effectiveness of the manipulation.

Participants next responded to measures of ethical decision frame, moral disengagement, and a few demographic variables. Upon completion of these items, participants were debriefed and thanked.

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correlate with any variables of interest in the study. I controlled for time pressure condition in all analyses, but the decision to include or omit this control does not substantively change any results.

Measures

Ethical decision frame. With the assistance of managers and training leaders in the participating organization, I developed a set of ten workplace safety standards intended to be familiar and relevant to all training participants. Sample items: "Making sure others are wearing appropriate PPE [personal protective equipment]," "Maintaining a clean and organized work station," and "Making proactive suggestions about how to make work safer." For each standard, participants were asked to indicate their level of agreement with a single statement (following Singhapakdi & Vitell, 1990): "This choice involves ethical issues," using a seven-point response scale (1 = "Strongly disagree;" 7 = "Strongly agree"). Participants' responses were consistent across items (Cronbach's $\alpha = .98$).

Moral disengagement. Participants' level of moral disengagement with an eight-item scale validated in prior research (sample item: "People can't be blamed for doing things that are technically wrong when their coworkers are doing it too;" Moore, Detert, Treviño, Baker, & Mayer, 2012). Moral disengagement refers to the psychological process of convincing oneself that ethical standards do not apply, allowing an individual to behave unethically without feeling distress (Bandura, 1990). Moral disengagement predicts a wide range of unethical behaviors (Aquino, Reed, Thau, & Freeman, 2007; Bandura, Caprara, & Zsolnai, 2000; Detert, Treviño, & Sweitzer, 2008; Moore et al., 2012; Welsh et al., 2014). Thus, this measure provided a test of the effects of construal level manipulation on ethical decision making more broadly, in contrast to the ethical decision frame measure (which focused on specific, safety-related decisions). Participants responding using a seven-point scale (1 = "strongly disagree;" 7 = "strongly agree"), and the measure was internally consistent (Cronbach's $\alpha = .86$).

Demographic variables. Participants also responded to demographic items, including age, educational attainment, job title, job tenure, organizational tenure, and industry tenure.

Results

Descriptive statistics and bivariate correlations for all study variables are reported in Table 1.

Manipulation Check

The construal level manipulation consisted of two steps, which allowed for two separate tests of the effectiveness of the manipulation. Two independent coders, who were blind to condition, first rated each of the three open-ended responses written by participants concerning what they observed in the manipulation photographs. Responses were coded using a seven-point scale anchored at "1 = very concrete (i.e., detail-focused)" and "7 = very abstract (i.e., big picture-focused)." Consistency between raters was assessed using the average deviation statistic (Burke & Dunlap, 2002). The computed *AD* value of .53 was below the relevant critical value (.74), indicating a statistically significant level of interrater agreement ($p < .05$; Smith-Crowe, Burke, Cohen, & Doveh, 2014). Internal consistency across the three responses was modest (Cronbach's $\alpha = .62$). Ratings were averaged across coders and responses to form a single index. OLS regression revealed a main effect of experimental condition, $\beta = .29$, $t(73) = 2.60$, $p = .01$. Participants in the high-level construal condition gave more abstract descriptions of the photographs ($M = 4.66$, $SD = 1.76$) than did participants in the low-level construal condition ($M = 3.59$, $SD = 1.78$).

Two condition-blind, independent coders also rated participants' workplace safety essays, using a seven-point scale anchored at "1 = entirely focused on subordinate actions" and "7 = entirely focused on superordinate goals." The computed *AD* value of .37 was also below the

relevant critical value (.65; Smith-Crowe et al., 2014), indicating statistically significant interrater agreement, and coders' ratings were averaged to form a single index. Regression results indicated a main effect of experimental condition, β = .90, $t(73) = 18.50$, $p < .001$. Essays written by participants in the high-level construal condition were more focused on superordinate goals (M = 6.56, SD = 1.26) than were essays written by those in the low-level construal condition (M = 1.57, SD = 1.09). Thus, two separate tests indicated that the construal level manipulation was successful.

Hypothesis Test

Regression results for Study 1 are presented in Table 2. Because responses to the ethical decision frame measure were consistent within-persons, the individual items were averaged to form a single index of participants' tendency to adopt an ethical decision frame with respect to safety performance[2]. OLS regression revealed a significant main effect of construal β = -.25, $t(73) = -2.21$, p = .03. Participants in the low-level construal condition (M = 6.56, SD = 0.58) adopted ethical decision frames to a greater extent than did participants in the high-level construal condition (M = 5.88, SD = 1.77), providing initial support for Hypothesis 2 (see Figure 2). This effect was entirely robust to controlling for moral disengagement, β = -.25, $t(73) = -2.31$, p = .02.

Additional Analyses

In contrast, regression results indicated no effect of the construal level manipulation on moral disengagement, β = .00, $t(73) = 0.03$, n.s. No difference in moral disengagement was

[2] The structure of these data might be interpreted as nested (i.e., individual safety standards nested within participants). After stacking the data, an ANOVA revealed significant within-person variance, $F(9,657) = 6.48$, $p < .001$, although between-person variance was much greater, $F(73,657) = 68.88$, $p < .001$. Taking this non-independence into account, mixed linear regression (controlling for safety standard and clustering by participant) revealed a significant main effect of construal level, b = -.68, $t(73) = -2.26$, p = .03, providing comparable support for Hypothesis 2.

observed between participants in the high- (M = 2.17, SD = 0.88) and low-level (M = 2.17, SD = 1.20) construal conditions. This result might be interpreted as evidence that no "general" relationship exists between construal level and ethical decision making, or it might be argued that moral disengagement is a relatively stable individual difference (e.g., Moore et al., 2012) and therefore unlikely to be influenced by subtle experimental manipulations.

The ethical decision frame measure correlated significantly with moral disengagement, $r(73) = -.30$, $p = .009$, indicating that participants higher in moral disengagement were less likely to adopt an ethical decision frame with respect to safety performance. This finding is consistent with prior work in which moral disengagement predicts more specific forms of ethical decision making (e.g., Aquino et al., 2007; Detert et al., 2008; Welsh et al., 2014).

CHAPTER 8: STUDY 2

Method

Study 2 extended the results of Study 1 in several ways. First, the construal level manipulation developed for Study 1 was validated in a controlled, laboratory setting, with research participants who were naïve (i.e., had no professional experience in the offshore drilling industry). Second, Study 2 included behavioral measures of safety performance, providing multiple tests of Hypothesis 2; and a self-reported measure of other-orientation, allowing for an initial test of Hypothesis 3. Third, these hypothesis tests were embedded in a contextually rich decision making simulation, balancing internal and external validity.

Participants

Eighty-five adults were recruited from a paid participant pool at a large research university in the Southeastern U.S. Six participants were removed from analyses for failing to follow basic instructions (e.g., missing deadlines), resulting in a final sample of 79. The majority of these participants (73.4 percent) were currently-enrolled undergraduate students, while the rest were current graduate students (12.7 percent), former students (6.3 percent), university staff (1.3 percent), and community members not affiliated with the university (6.3 percent). The average age of participants was 22.7 years (SD = 5.9), and 64.6 percent were women.

Simulation

During the study, participants completed an adapted version of Deepwater: A Competitive Business Ethics Simulation Game (Buck, 2015). Deepwater is a competitive decision making exercise in which participants simulate the management of an offshore drilling

vessel operating in the Gulf of Mexico. The simulation challenges participants to make a series of iterative, interrelated decisions under uncertainty, while managing multiple goals (e.g., profitability, accident prevention). Study 2 was the first use of Deepwater in an empirical research setting. Minor adaptations were made to remove explicit references to ethics from the simulation interface and training materials.

Procedure

***Randomization*.** Participants were randomly assigned to conditions in single factor (i.e., construal level: high vs. low), between-subjects design. All participants completed the study as individuals. However, the nature of the experimental manipulation required that assignment be randomized at the level of the study session, rather than at the level of the individual participant. A total of 13 sessions were conducted, with between five and eight participants enrolled in each session.

Training. The study procedure took approximately three hours in total. Upon arriving in the lab, participants were first taken to the "training room," to prepare for the simulation. In the training room, participants spent 25 minutes individually reviewing the training materials, which included the participant handbook, a "quick reference guide" summarizing key simulation parameters and assumptions, an example prospectus, and a description of the Beaufort wind force scale. The experimenter then conducted a short presentation, which involved summarizing information from the training materials, demonstrating use of the simulation interface, and answering any participant questions. To promote a sense of economic competition, participants were given the opportunity to win performance-based raffle tickets. Specifically, in each session, the participant with the highest net income in each round received one raffle ticket, and the top

three overall performers (again, in terms of net income) received additional raffle tickets. At the conclusion of the study, a raffle drawing was conducted, and three winners received gift cards.

Following the presentation, participants accessed the simulation and completed a non-competitive "practice round," in order to familiarize themselves with the interface. After reviewing the results of the practice round, participants next completed a short, interactive, knowledge quiz, covering several critical simulation details. The quiz alerted participants to any incorrectly answered questions, and required participants to correct their work before advancing. The purpose of the quiz was to ensure that all participants began the simulation with complete knowledge of these details, including safety-related standards and best practices (e.g., the recommended baseline expenditure for safety programs of $1.2 million per simulation round).

After completing the quiz, participants had approximately ten minutes left in the training room, in which they could continue review the training materials, explore the simulation interface, or ask the experimenter questions.

***Manipulation*.** Once the training phase of the study was complete, participants were taken from the "training room," to the "decision making room." The layout of the decision making room provided the manipulation of construal level (see Appendix 2). The context of the deepwater drilling industry provides a natural contrast in construal level, between decision makers who work aboard drilling vessels (i.e., "in the trees" of the drilling operation), and those who work in onshore command centers (i.e., conventional office environments in which the drilling operation is physically—and psychologically—distant). To simulate this contrast, large color photographs were affixed to the walls surrounding participants' cubicles. Following Study 1, "bird's eye" photographs of various deepwater drilling vessels were utilized for the high-level construal condition, while photographs of specific work areas aboard those vessels (e.g.,

drillfloor; derricks) were utilized for the low-level construal condition. The same set of condition-specific images was also embedded in the survey participants completed while in the decision making room. To reduce the likelihood of this manipulation also affecting participants' degree of other-focus, no human figures were included in either set of photographs.

Simulation. Participants competed in a version of the Deepwater simulation that consisted of six rounds, and took approximately two hours to complete (15 minutes per round, plus short breaks prior to round 1, and after rounds 3 and 6). At the beginning of each round, participants were asked to make a set of interrelated decisions concerning the operations, expenditures, and staffing of their drilling vessel. Each round, participants decided (1) whether to produce oil or suspend operations; (2) whether to service their vessel's blowout prevention device; (3) what crude oil production target to set; (4) how much money to spend maintaining their vessel; (5) how much money to spend on safety programs; (6) how many workers to hire and fire, if any; (7) how many workers to send for onshore training; and (8) how much money to spend on pollution control equipment, if any.

At the conclusion of each round, the experimenter made a brief announcement in the decision making room, notifying participants of the top performers in the current round, and overall (by net income). Participants then received an "Operations and Financial Report," which included detailed information about their vessel's production, final performance, equipment condition, and environmental impact, as well as any adverse safety outcomes, which might include safety violations, crew-member injuries, crew-member fatalities, and blowouts (catastrophic explosions that may occur when well control is lost). While adverse safety outcomes were, on aggregate, correlated with participants' choices (e.g., decreasing safety program spending increased the likelihood of injuries and safety violations), the relationship was

not deterministic—the simulation, like the real-world industry it models, involved significant uncertainty. Participants also received a "Market Report," which listed their overall financial, operating, and social cost figures to date, relative to their competitors (i.e., the other participants in the study session).

Participants also received information about the current and forecasted weather for the Gulf of Mexico, and the current spot price for crude oil. These exogenous factors were intended to provide an additional layer of uncertainty and complexity in participants' decision making. The trajectory of weather conditions and oil prices over the course of the simulation was identical for all participants. While oil prices were relatively stable across all six rounds, weather conditions worsened over the first four rounds, culminating with a tropical storm in round 4, and then improved for the final two rounds.

The simulation parameters were set to make profitability attainable, but difficult (65.8 percent of participants finished the simulation with an overall net loss). As in the real world, participants faced temptation to increase profits in the short-term by decreasing spending on safety programs. To heighten this tension between safety and profit, a more competitive environment was promoted in three ways: (1) the experimenter described the net income-based raffle during the training phase of the study; (2) the experimenter announced the top performers publicly at the conclusion of each round; and (3) through the Market Report, which served as more detailed "leaderboard" with which participants could compare their individual performance to that of their competitors in the study session.

Survey. In between rounds of the simulation (and prior to the start of the first), participants responded to several survey questions. These measures are described in detail below.

At the end of the simulation, participants responded to a few final items, and were then debriefed, paid, and thanked.

Measures

Dependent variable: Safety program spending. In each of the six simulation rounds, participants chose an amount to spend on safety programs. The simulation training materials informed participants that these programs, which included on-the-job training and emergency drills, would decrease the likelihood of accidents that could injure or kill workers. Thus, of all decisions made during the simulation, safety program spending was most clearly and directly related to participants' safe performance. The training materials also provided a recommended "baseline" expenditure of $1.2 million per round, but stressed that this amount was neither a minimum nor a maximum. Participants were not required to spend any money on safety programs, and could spend up to $20 million per round.

I focused in particular on participants' safety program spending during round 1 of the simulation. In later rounds, participants' decisions might be anchored by competitors' spending (revealed through the Market Report), or reactive to the results of previous rounds (e.g., spending more on safety programs after an injury occurs). Prior to making their round 1 decisions, in contrast, participants were exposed only to the experimental manipulation and training materials. However, participants' safety spending decisions were also internally consistent across rounds (Cronbach's $\alpha = .81$). All analyses are therefore reported for both round 1 safety spending and aggregate safety spending (i.e., total spending across all 6 rounds).

Mediator: Ethical decision frame.

The study included a total of four measures of ethical decision frame.

Coded Measure (before Round 1). After moving to the decision making room (and being exposed to the experimental manipulation), but before entering their round 1 decisions, all participants responded to an open-ended writing prompt, "Please spend 2-3 minutes writing about your strategy for the simulation. That is, what do you hope to accomplish?" Responses to this prompt were coded to provide the manipulation check (see below), but were also coded to provide an unobtrusive measure of whether or not participants adopted an ethical decision frame. This approach was desirable because it did not alert participants to our interest in ethical decision making, which might have influenced their behavior during the simulation.

Two independent judges coded each response. Responses were coded 1 when participants explicitly cited harm prevention as a consideration in their strategy, indicating of an ethical decision frame (e.g., "My main concern is to keep all workers on the rig from harm at all costs;" Tenbrunsel & Messick, 1999). Responses that did not reference harm prevention were coded 0. The judges met to discuss disagreements with guidance from the author, and were able to resolve all disagreements. Thirteen participants (16.5 percent) in total adopted an ethical decision frame.

Implicit Measure (Before Round 1). Also prior to the start of the simulation, participants completed a word fragment task. Such tasks assess implicit cognitive processes (Bassili & Smith, 1986; Tulving, Schacter, & Stark, 1982), and in this case provided an implicit measure of ethical decision frame adoption. Specifically, participants were presented with a randomly-ordered list of eight word-fragments (e.g., "p _ r _"), of which four could be completed using either neutral words (e.g., "mild," "vortex"), or words associated with ethical virtue and purity (e.g., "kind," "virtue;" Sherman & Clore, 2009; Shu, Gino, & Bazerman, 2011). The number of ethics-related words identified provided the measure of ethical decision frame adoption.

Explicit Categorical Measure (Before Round 4). Between the third and fourth rounds of the simulation, participants were asked to categorize the "type" of each of the eight simulation decisions described above (following Tenbrunsel & Messick, 1999). For each decision (e.g., "How much crude oil to produce"), participants were asked to "indicate which label best describes each of the following decisions for you." The available choices were: ethical decision, personal decision, legal decision, and environmental decision.

Explicit Continuous Measure (After Simulation). At the conclusion of the simulation, participants completed a scale-based measure of ethical decision framing, adapted from Study 1. For each of the eight simulation decisions, participants rated their level of agreement with the statement, "This decision involves ethical issues." Participants responded using a 7-point scale (1 = strongly disagree; 7 = strongly agree). Responses were internally consistent across decisions (Cronbach's $\alpha = .85$).

Moderator: Other-orientation vs. self-interest. At the end of the simulation, participants self-reported the degree to which they had focused on the well-being of others, versus their own well-being, as they made their decisions. Other-orientation and self-interest were measured using two items each, adapted to this context from a more general measure of workplace other-orientation (De Dreu & Nauta, 2009). For other-orientation, the items were "During the simulation, I thought about how others might be harmed by my decisions," and "I was concerned with how my decisions might impact others' well-being." Participants responded using a 7-point scale (1 = strongly disagree; 7 = strongly agree). The items were significantly correlated, $r(78) = .95$, $p < .001$, and were averaged to form a single index. For self-interest, the items were "During the simulation, I thought about how my decisions might harm me personally," and "It felt as though I might be harmed as a result of my decisions during the simulation." Participants

responded using the same rating scale. The items were also correlated, $r(78) = .95$, $p < .001$. The indices computed for other-orientation and self-interest were not significantly correlated, $r(78) = .17$, $p = .13$. Other-orientation and self-interest were therefore analyzed separately, rather than aggregating.

Other-orientation was measured, rather than manipulated, in Study 2 for several reasons. Participants were exposed to the primary manipulation (construal level) for the duration of the study, making it likely that any secondary manipulation would be overshadowed. Second, the study design involved no possibility of harm to participants themselves, which limited the potential strength of any other-orientation vs. self-interest manipulation (contrast with Grant & Hofmann, 2011). Lastly, by making drillers' workstations appear more or less proximal in the "decision making room," the construal level manipulation might itself activate other-orientation, potentially confounding a secondary manipulation. Measuring other-orientation enabled me to test this possibility empirically (other-orientation was not significantly related to the construal manipulation, $r(78) = .00$, $p > .5$), and to conduct an initial test of Hypothesis 3.

Control variables: Session week and day. Participants were assigned to experimental conditions at the session level (i.e., rather than the individual level). To address the possibility of session effects, I included dummy codes for the week in which the session took place (the study was conducted over the course of four weeks), and the day of the week, in all analyses. Unless otherwise indicated, inclusion of these control variables did not substantively alter the results.

Results

Descriptive statistics and bivariate correlations for all study variables are reported in Table 3.

Manipulation Check

The effectiveness of the construal level manipulation was assessed by coding participants' responses to the open-ended prompt about their approach to the simulation, described above. The term "strategy" was selected for this prompt due to its relative ambiguity from a construal level standpoint—participants might respond by planning specific tactics (lower-level construal), or describing overarching goals (higher-level construal; Reyt et al., 2016). Responses were rated using a 7-point scale, with 1 indicating the lowest level of construal (i.e., complete focus on subordinate actions), and 7 indicating the highest level of construal (i.e., complete focus on superordinate objectives). To illustrate, the response, "My general goals are simple. Produce and profit at a high level. Keep injuries down," received a rating of 7 from both coders. An example of a response that received a 1 from both coders is:

> Do my best to not repair the rig completely and spend a little bit less [than] the minimum suggest for each round, maybe proceeding to complete [blowout preventer overhaul] mid experiment or a quick [blowout prevent overhaul] before the end, if I see the weather is getting higher than 8 I will proceed to a shut in, and a reparation if necessary. Increase the number of employee[s] in training and freeze the number of new employees.

Consistency between raters was assessed using the average deviation statistic (Burke & Dunlap, 2002). The computed *AD* value of .40 was below the relevant critical value (.73), indicating a statistically significant level of interrater agreement ($p < .05$; Smith-Crowe et al., 2014). These ratings were therefore averaged to form a single index. OLS regression results revealed a main effect of experimental condition, $\beta = .27$, $t(70) = 2.27$, $p = .03$. Participants in the high-level construal condition described their strategy for the simulation in more goal-

focused terms (M = 4.99, SD = 1.78) than did participants in the low-level construal condition (M = 4.01, SD = 2.14). These results indicate a successful manipulation.

At the conclusion of the simulation, participants' level of psychological distance was assessed, with respect to the workers on their vessel. Participants responded to a nine-item measure (adapted from Kim, Harrison, & Martins, 2016), which included three items each corresponding to social, temporal, and spatial distance (e.g., "When I think about the workers on my rig… it feels like they are physically close to me"). This measure was internally consistent (Cronbach's α = .85); however, analyses revealed no main effect of condition, β = -.03, $t(70)$ = -0.20, n.s. Participants in the high-level construal condition (M = 3.60, SD = 1.34) did not report greater psychological distance from workers than did participants in the low-level construal condition (M = 3.63, SD = 1.31).

Hypothesis Tests

Regression results revealed a significant main effect of construal level on round 1 safety program spending, β = -.26, $t(70)$ = -2.18, p = .03. The effect of construal level on total (i.e., aggregate) safety program spending was also marginally significant, β = -.21, $t(70)$ = -1.73, p = .09 ($p < .05$ one-tailed). Participants in the low-level construal condition spent more on safety programs in round 1 (M = $3.62 million, SD = $4.50 million), and overall (M = $15.3 million, SD = $16.1 million), than did participants in the high-level construal condition (round 1: M = $1.80 million, SD = $1.85 million; overall: M = $10.7 million, SD = $7.72 million). These results indicate a direct effect of construal level on safety performance, such that participants in the low-level construal condition performed more safely.

Because Study 2 used dichotomous operationalizations of ethical decision frame, it was necessary to evaluate the two stages of the hypothesized moderated mediation model (see Figure

1) separately. Specifically, the first stage was estimated using binary logistic regression for dichotomous measures (the coded and explicit categorical measures), and using OLS regression for the continuous measures (the implicit measure and explicit continuous measure). The second stage was estimated using OLS regression.

First stage. The first stage of the model was analyzed hierarchically (see Table 3). Hypothesis 2 predicted that lower levels of construal increases the likelihood of adopting an ethical frame for safety-relevant decisions. To test this prediction, I first estimated a model including only the main effects of construal level and other-orientation as predictors (in addition to the session-level controls described above). Correlations between the various ethical decision frame measures were, in many cases, non-significant (see Table 1). For the coded measure of ethical decision frame adoption, the main effect of construal level on ethical decision frame adoption was not significant, $Exp[b] = -.90$, $z(70) = -1.06$, $p > .1$. The main effect of concern for others *was* significant, $Exp[b] = 1.13$, $z(70) = 2.78$, $p = .005$, indicating that participants who reported more other-orientation were more likely to adopt an ethical decision frame (controlling for experimental condition). Similarly, using the explicit, "categorization" measure, construal level was not a significant predictor, $Exp[b] = -.28$, $z(70) = -0.59$, $p > .1$, but other-orientation was, $Exp[b] = .34$, $z(70) = 2.52$, $p = .01$. Construal level was also not a significant predictor of the implicit (i.e., word completion) measure, or the explicit measure used in Study 1. Thus, across all four measures, Hypothesis 2 was not supported. Other-orientation was a significant predictor of the explicit measure of ethical decision frame, $\beta = .52$, $t(70) = 5.22$, $p < .001$.

The construal level X other-orientation interaction term was added as a predictor in the second model. Hypothesis 3 predicted that the strength of the construal level-ethical decision frame path depends upon an individual's degree of other-orientation, such that the effect is

enhanced when other-orientation is high, and attenuated when other-orientation is low (or supplanted by self-interest). Using the coded measure of ethical decision frame adoption, the interaction effect was significant, *Exp[b]* = -5.86, $z(68) = -2.36$, $p = .02$. To interpret this interaction, I first analyzed simple slopes (Aiken & West, 1991) to compare the effects of construal level at different values of other-orientation. With other-orientation at its mean, the effect of construal level was non-significant, *Exp[b]* = 2.79, *SE* = 1.93, $p = .15$. One standard deviation below the mean of other-orientation, there was a marginally significant positive effect of construal level, *Exp[b]* = 8.18, *SE* = 4.24, $p = .05$, suggesting that participants low in other-orientation were slightly more likely to adopt an ethical frame in the *high-level* construal condition. One standard deviation above the mean of other-orientation, however, there was a significant negative effect of construal level, *Exp[b]* = -2.60, *SE* = 1.02, $p = .01$, indicating that participants high in other-orientation were more likely to adopt an ethical decision frame in the low-level construal condition, as predicted.

The logistic regression results were then used to compute predictive margins, which indicate the expected value of a dependent variable at specified values of the independent variables (Graubard & Korn, 1999). With other-orientation fixed at one standard deviation below its mean, the predicted margin for the ethical decision frame measure was .00 for the low-level construal condition, and .08 for the high-level construal condition. With other-orientation held one standard deviation above its mean, the predictive margin was .73 for the low-level construal condition, and .17 in the high-level construal condition (see Figure 3). In other words, low-level construal dramatically increased the likelihood of adopting an ethical decision frame among participants high in concern for others, but had little effect on participants low in concern for others.

Thus, support was found for Hypothesis 3 using the coded measure of ethical decision frame adoption—the only measure administered *before* participants implemented their strategy for round 1. However, the construal level X other-orientation interaction was non-significant in analyses involving the other three ethical decision frame measures, suggesting this result should be interpreted with some caution.

Second stage. The second stage of the model was analyzed using OLS regression (see Table 4). Hypothesis 1 predicted that adopting an ethical decision frame leads to greater safety performance. Consistent with this prediction, the effect of the coded ethical decision frame measure on round 1 safety program spending was significant, $\beta = .40$, $t(70) = 3.67$, $p < .001$. The spending of participants who adopted an ethical decision frame (M = \$5.71 million, SD = \$1.52 million) was nearly three times that of participants who did not (M = \$2.05 million, SD = \$0.32 million). The effect of ethical decision frame on total safety spending was also significant, $\beta = .42$, $t(70) = 3.94$, $p < .001$. Thus, Hypothesis 1 was also supported using this measure. Again, however, use of the other three measures of ethical decision frame adoption led to non-significant results, for both round 1 safety spending and overall safety spending.

Supplementary Analyses

Other behavioral outcomes from the simulation help to illustrate the complexity of construal level's role in organizational decision making. In terms of performance, construal level had positive effects on both production volume and gross revenues, $\beta = .26$, $t(70) = 2.14$, $p = .04$, indicating that participants in the high-level construal condition set more aggressive production targets (because oil prices did not fluctuate between rounds, these measures were perfectly correlated). However, construal level did not predict net income, $\beta = .17$, $t(70) = 1.44$, $p > .1$, suggesting that higher revenues and lower levels of safety spending among participants in the

high-level construal condition were offset by other factors (e.g., fines for safety violations, other voluntary expenses).

Construal level did not predict spending on vessel maintenance, β = -.18, $t(70) = 1.53$, $p > .1$, or the number of workers sent to receive on-shore training, β = .02, $t(70) = 0.13$, $p > .1$[3]. Both of these decisions had potential consequences for worker safety, which might suggest a prediction of increased maintenance spending and worker training in the low-level construal condition. On the other hand, these factors were also more distally or indirectly linked to possible accidents and injuries than safety program spending, suggesting that their significance might be more accessible to those thinking more abstractly (i.e., participants in the high-level construal condition).

Finally, construal level had a *positive* effect on pollution control spending, β = .29, $t(70) = 2.26$, $p = .03$, as participants in the high-level construal condition were more likely to install pollution control equipment during the first round (76.2 percent of participants, vs. 43.2 percent in the low-level construal condition), and to select more effective—and expensive—options (23.8 percent chose to install the most expensive of the four options, vs. 8.1 percent in the low-level construal condition). The simulation provided participants no incentive whatsoever to invest in pollution control, other than feedback on the social cost (i.e., carbon footprint) of their business included in the Market Report. While environmental conservation and social cost reduction might reasonably be classified as ethical goals, they are also relatively abstract and far-reaching in scope. Such goals, even within the ethical domain, might be more accessible at higher levels of construal. In keeping with this interpretation, prior work has shown that higher levels of construal lead to more future-benefiting choices in intergenerational dilemmas (for a

[3] These results correspond to participants' round 1 decisions; however, the aggregate effects are similar.

review, see Wade-Benzoni & Tost, 2009), and that certain ethical considerations are more salient at higher levels of construal (e.g., distributive vs. interactional justice; Cojuharenco et al., 2011). In a similar vein, it might be reasoned that harm to a broader set of stakeholders (e.g., future generations; the environment) may become more salient at higher levels of construal.

Alternatively, however, the "bird's eye" photographs displayed in the high-level construal condition might simply have increased the salience of environmental concerns, by depicting drilling vessels against the background of otherwise pristine oceanscapes.

CHAPTER 9: STUDY 3

Method

Study 3 was a laboratory experiment, also conducted at a large research university in the Southeastern U.S. Study 3 employed a relatively simple, controlled, design intended to maximize internally validity. Both construal level and other-orientation (contrasted with self-interest) were experimentally manipulated, to allow for a complete test of the hypothesized moderated mediation model depicted in Figure 1. The design of Study 3 was also unrelated to the context of deepwater drilling, in which harm-based safety concerns may be unusually salient. By testing the same hypotheses in an entirely different, and relatively mundane, setting, Study 3 provided a test of the generalizability of the results of Studies 1 and 2.

Participants

A total of 123 paid participants were recruited through an online pool, to take part in a "Model Building Study." The majority of these participants (73.2 percent) were currently-enrolled undergraduate students, while the rest were current graduate students (12.2 percent), former students (6.5 percent), university staff (3.3 percent), and community members not affiliated with the university (4.9 percent). The average age of participants was 23.6 years (*SD* = 8.8), and 60.2 percent were women.

Procedure

Participants were randomly assigned to conditions in a 2 (construal level: high vs. low) x 2 (other-orientation vs. self-interest) factor between-subjects design. When participants arrived in the laboratory, they were seated at individually partitioned computer stations. Dispensers of hand

sanitizer and anti-bacterial cleaning wipes were placed at each station. A placard describing "Lab Health and Safety Guidelines" was attached to each computer tower, positioned to be directly in the participant's line of sight. The contents of this placard included the initial manipulations of both construal level and other-orientation vs. self-interest. Once participants were seated, the experimenter greeted them and explained the study procedure. During this introduction, the experimenter also called participants' attention to the placard. In all conditions, the placard began with the following text:

> The weather may be getting warmer, but the flu is still going around campus. Because you'll be working with your hands during this study, we ask that everyone do the following:
>
> 1. When you are ready to build your model (i.e., after you complete the initial survey), please use the <u>hand sanitizer</u> on your desk to clean your hands.
> 2. Once you have finished building your model and placed all pieces back in the bag, please use one of the <u>cleaning wipes</u> on your desk to clean your work tray.

These lines served to establish the relevance of safety in the laboratory setting, and to communicate clear standards for safe performance. The remaining information on the placards varied by condition. First, other-orientation vs. self-interest was manipulated with the following text:

> **We don't want [YOU TO PASS / YOU TO CATCH] the flu [on to / from] other participants, or the research assistants running the study.** Remember, the flu has a long incubation period, so even if [you haven't had / they aren't showing] any symptoms [**<u>you could still make others sick / others could still make you sick</u>.**]

Then, construal level was manipulated. In the high-level construal conditions, the placard contained an additional block of text, which began with "Symptoms of the flu include," and went on to list several familiar symptoms (e.g., "headache," "warm, flushed skin"). In the low-level construal conditions, the same space on the placard was instead occupied by an image—an "emoji" ideogram depicting a generic face exhibiting the same flu symptoms that were described in the high-level construal conditions. This manipulation was developed for use in Study 3, following prior work which has shown that image-based stimuli activate lower levels of construal, while text-based stimuli activate higher levels of construal (Amit et al., 2009).

Participants began the study by first completing a short, computer-based survey. The survey's introductory screen reminded participants to review the "Lab Health and Safety Guidelines" placard, and reinforced the manipulation of other-orientation vs. self-interest with a single line: "We don't want you to make others sick," vs. "We don't want others to make you sick."

The next survey step provided a second, stronger manipulation of construal level. Following a procedure developed and validated for experimental CLT research (Freitas, Gollwitzer, & Trope, 2004, Experiment 1), participants were asked to complete a "thought exercise worksheet." Participants assigned to the high-level construal conditions were instructed to think about *why* they would engage in an activity, while participants assigned to the low-level construal conditions were asked to think about *how* they would engage in an activity (in all conditions, the activity was "health improvement"). Participants in the high-level construal conditions completed the thought exercise worksheet by thinking about the activity in increasingly abstract terms, successively indicating *why* they would engage in the activity, and why they would pursue each of the higher-level goals identified in their responses. Participants

in the low-level construal conditions instead completed the worksheet by thinking about the activity in increasingly concrete terms, successively indicating *how* they would engage in activity, and how they would engage in each of the lower-level activities identified in their responses. All participants were asked to provide responses across four levels of abstraction, whether increasing or decreasing (Freitas et al., 2004). These worksheets were subsequently coded to provide the manipulation check for construal level.

Participants next completed a word fragment task. Such tasks assess implicit cognitive processes (Bassili & Smith, 1986; Tulving, Schacter, & Stark, 1982), and in this case provided implicit measures of both ethical decision frame adoption and self-interest (the latter intended as a test of the other-orientation vs. self-control manipulation). Specifically, as in Study 2, participants were presented with a randomly-ordered list of eight word-fragments (e.g., "p _ r _"), of which four could be completed using either neutral words (e.g., "mild," "vortex"), or words associated with ethical virtue and purity (e.g., "kind," "virtue;" Sherman & Clore, 2009; Shu, Gino, & Bazerman, 2011). I preferred this list of words related to similar measures that instead highlight unethical behaviors (e.g., "fraud," "cheat;" Gino & Bazerman, 2009), because the outcomes of interest in Study 3 contrasted proactive behavior with "sins of omission" (i.e., acting to promote hygiene and safety vs. failing to do so), as opposed to more explicitly unethical "sins of commission" (Spranca, Minsk, & Baron, 1991). Moreover, because safety performance was operationalized in terms of hygiene in Study 3, I anticipated that words related to ethical purity would be relatively accessible for participants.

The remaining four word-fragments were developed for this study, and could be completed using either neutral words (e.g., "mint;" "golf"), or words associated with focus on the self (e.g., "mine;" "self"). Because these word sets were seemingly unrelated, presenting them

together also served to conceal the goal of the measure (following Gino & Desai, 2012). The number of ethics- and self-related words used by each participant was independently summed to provide the two measures (both ranging in value from 0 to 4).

After completing this measure, participants were instructed to notify the experimenter that they were ready to begin the model-building task. The experimenter brought each participant a ceramic tray, which contained (1) the 72 Lego pieces needed to assemble a small model car, (2) an instruction booklet containing step-by-step assembly instructions, and (3) an empty, sealable, plastic bag. Participants were instructed to build the car following the instructions in the booklet, allowing for an objective measure of model-building performance (i.e., the highest-numbered "step" completed).

Participants were given five minutes to assemble their model cars[4], and a timer was displayed on screen as they worked. Because the "Lab Health and Safety Guidelines" instructed participants to clean their hands with hand sanitizer before beginning this task, the experimenter discreetly coded whether or not participants had done so at this point in the study. At the beginning of each session, the hand sanitizer dispenses were placed in a "locked" position, which allowed the experimenter to easily and reliably determine which dispensers had been used, even if he or she did not directly observe their use. This behavioral coding provided the first dependent variable (coded 1 if participants used the hand sanitizer, and 0 if they did not).

When five minutes had elapsed, a survey screen appeared instructing participants to (1) stop building, (2) place their model cars (and any unused pieces) in the sealable bag, and (3) "Follow any other instructions you may have received," before notifying the experimenter. The

[4] Pilot testing indicated that a five minute interval would be long enough to create variance in model-building performance, but short enough that no participants would complete the task entirely and have "down time." During the study, however, five participants (4.3 percent) were able to fully assemble their model cars in the allotted time.

purpose of this final instruction was to provide participants a clear opportunity to follow the second instruction from the "Lab Health and Safety Guidelines" (i.e., using anti-bacterial cleaning wipes to clean the work trays in which they had assembled their model cars). Prior to each session, so that this behavior could also be indirectly observed, the experimenter opened each container of cleaning wipes and made a discrete mark on the first wipe to be dispensed. Thus, at the end of the session, the experimenter could also record which participants had used cleaning wipes, even if this behavior was not observed directly. This measure provided the second dependent variable, (coded 1 if participants used the cleaning wipes, and 0 if they did not).

When participants notified the experimenter that they were ready to continue, the experimenter collected their model building materials, and instructed them to return to the survey. Although the model cars were re-used, they were never disassembled during study sessions, or in view of participants (as prior work has shown that doing so can adversely affect participants' motivation and sense of meaning; Ariely, Kamenica, & Prelec, 2008).

Participants first completed a second measure intended to reflect other-orientation vs. self-interest. In a sentence completion task (ostensibly evaluating redundancy in written language; Wegner & Guiliano, 1980), participants were asked to select one of three possible pronouns to complete each of five sentences. In all cases, the available options included one first-person singular pronoun (e.g., "I," "my"), and two third-person pronouns (e.g., "she," "their"). Selecting a first-person pronoun to complete a sentence indicated greater self-interest, while selecting a third-person pronoun indicated greater other-orientation. The number of first-person pronouns chosen was summed to provide a quantitative measure (ranging in value from 0 to 5).

Next, participants completed two additional measures of ethical decision frame adoption. First, for each of the two safety performance standards communicated in the "Lab Health and Safety Guidelines," participants were asked to categorize their decision making (following Tenbrunsel & Messick, 1999). Specifically, the instructions read:

> During today's study, you were asked to abide by lab health and safety guidelines. For each of these guidelines, you had to make a decision (i.e., whether or not to do what the instructions asked). For each of these decisions, please respond to the following question: If you had to choose one description for this decision, how would you describe it?

Participants then categorized each decision as: an ethical decision, a business decision, a personal decision, a legal decision, or an environmental decision. Overall, 35.8 percent of participants categorized the decision to use hand sanitizer as an ethical decision, and 40.7 percent categorized using cleaning wipes as an ethical decision. These two responses were significantly correlated, $r(121) = .45$, $p < .001$.

Participants were also asked to provide a continuous rating of the strength of their ethical frame for both decisions, with the same single-item measure used in Study 1 ("This decision involves ethical issues"). These responses were entered using a 7-point scale (1 = strongly disagree; 7 = strongly agree). Responses for hand sanitizer use and cleaning wipe use were correlated, $r(121) = .66$, $p < .001$, as were ratings of ethical frame for the same safety performance decision compared across the two measures ($.45 < rs < .60$).

After responding to these measures, participants reported some basic demographic information, after which they were debriefed and thanked.

Results

Descriptive statistics and bivariate correlations for all study variables are presented in Table 6.

Manipulation Checks

Construal level. Participants' responses to the "thought exercise worksheet" were coded by two independent judges, blind to the experimental condition. Judges rated the superordinate vs. subordinate focus of each participant response (following Fujia et al., 2006). Each participant provided four responses, and coders assigned a score of -1 to responses that were clearly subordinate to the original statement (i.e., "maintain good physical health"), a score of 1 to responses that were clearly superordinate, and a score of 0 if the response was unclear, or fit neither criterion. These scores were summed within participants to create an index with a potential range of -4 to +4. The computed average deviation (*AD*) value of .11 was below the relevant critical value (.73), indicating a statistically significant level of interrater agreement ($p < .05$; Smith-Crowe et al., 2014), and were averaged to form a single index. OLS regression revealed a significant main effect of construal level condition on this index, $\beta = .97$, $t(121) = 50.21$, $p < .001$, as participants in the high-level construal conditions provided more superordinate responses ($M = 3.57$, $SD = 0.79$) than participants in the low-level construal conditions ($M = -3.60$, $SD = 0.79$).

Other-orientation vs. self-interest. The effectiveness of the other-orientation vs. self-interest manipulation was assessed with four items developed for this study: "During today's study, I…: "…was worried about others becoming sick," "…was worried about becoming sick myself," "…thought about how my actions might harm others," "…thought about how I myself might be harmed." Participants responded using a 7-point scale (1 = strongly disagree; 7 =

strongly agree). The two items reflecting other-orientation were correlated, $r(121) = .66$, $p < .001$, as were the two items reflecting self-interest, $r(121) = .61$, $p < .001$. These items were combined to form indices of other-orientation and self-interest, which were positively correlated, $r(121) = .56$, $p < .001$. Because of this result, the items were not combined to form a single index (i.e., consistent with a single, bipolar construct; Meglino & Korsgaard, 2004), and were instead analyzed separately. The experimental manipulation of other-orientation vs. self-interest did not significantly predict the other-orientation index, $\beta = -.15$, $t(121) = -1.68$, $p = .1$, or the self-interest index, $\beta = -.01$, $t(121) = -0.10$, $p = .1$.

The other-orientation vs. self-interest manipulation also did not predict the number of self-focused words identified in the word fragment completion task, $\beta = -.12$, $t(121) = -1.28$, $p > .1$, nor did it predict the number of first-person pronouns selected in the sentence completion task, $\beta = .15$, $t(121) = 1.72$, $p = .09$. While the latter effect was marginally significant, its direction suggests that participants selected more first-person pronouns (i.e., exhibited more self-interest) in the *other-orientation* conditions.

In short, either the manipulation of other-orientation was unsuccessful, or the measures used to assess this manipulation were flawed. Given that multiple measures of other-orientation were uncorrelated with the manipulation, and at least modestly correlated with one another, the former conclusion seems more likely. Possible interpretations of an unsuccessful manipulation are considered in the general discussion below. However, it was still possible to conduct tests of the model depicted in Figure 1 using these measures, using *measured* other-orientation vs. self-concern. In all analyses, the level of the other-orientation vs. self-concern manipulation was included as a control variable. Unless otherwise indicated, the results reported were not substantively altered by including (vs. omitting) this control.

Hypothesis Tests

In total, 88 participants (71.5 percent) used the hand sanitizer as instructed, and 43 participants (35.0 percent) used the anti-bacterial cleaning wipes as instructed. Binary logistic regression revealed no direct effect of construal level condition on safety performance. Construal level alone did not predict participants' use of hand sanitizer, *Exp[b]* = -.29, $z(121) = -0.71$, $p > .1$, or of cleaning wipes, *Exp[b]* = .22, $z(121) = 0.59$, $p > .1$.

Following the analytical procedure used in Study 2, I first estimated separate models for the first and second stages of the moderated mediation model depicted in Figure 1. However, because Study 3 included one continuous measure of the hypothesized mediator (ethical decision frame), it was also possible to conduct holistic tests of the complete theoretical model.

First stage. The first stage of the model was analyzed hierarchically (see Tables 7 and 8). To test Hypothesis 1, I first estimated the models including only the main effect of construal level on various measures of ethical decision frame adoption. For the implicit (word-completion) measure of ethical decision frame adoption, OLS results showed a just-significant effect of construal level, $\beta = .18$, $t(121) = 2.01$, $p = .05$. Contrary to the prediction of Hypothesis 2, however, this effect was positive in direction, indicating that participants in the high-level construal conditions completed more ethics-related words. In evaluating participants' decision to categorize safety performance as an ethical decision (vs. other decision type), logistic regression revealed no main effect of construal level on the categorization of hand sanitizer use as an ethical decision, *Exp[b]* = .09, $z(121) = 0.25$, $p > .1$, and a marginally significant main effect of construal level on the categorization of cleaning wipe use as an ethical decision, *Exp[b]* = .74, $z(121) = 1.95$, $p = .05$. Again contrary to prediction, this latter effect was positive in direction. In terms of the strength of participants' ethical decision frames for the two dependent variables,

construal level did not significantly predict ethical frame strength for hand sanitizer use, β = .03, $t(120) = 0.38$, $p > .1$, or for cleaning wipe use, β = .15, $t(120) = 1.64$, $p = .10$, though this latter effect was close to significance (and, again, positive in direction). Thus, across multiple ethical decision frame operationalizations, Hypothesis 2 was not supported. Possible interpretations of this finding are discussed below.

Next, I tested for moderation of the construal level-ethical decision frame path by other-orientation (Hypothesis 3). To simplify the reporting of results, only results involving the implicit word fragment completion measure are described and interpreted here. Because this measure represented the number of *self*-focused words participants completed, higher values corresponded to lower levels of other-orientation. Because Hypothesis 3 is stated in terms of other-orientation, results are interpreted accordingly below. Results for the same set of analyses, instead using the sentence completion measure (i.e., selecting first- vs. third-person pronouns), are reported in Appendix 4.

Hypothesis 3 was first tested using the implicit (word-completion) measure of ethical decision frame. Here, the construal level X other-orientation interaction was non-significant, β = -.03, $t(120) = -0.20$, $p > .1$.

The next set of analyses focused on the dichotomous (i.e., categorization-based) measure of ethical decision frame. For the decision to use hand sanitizer, a significant construal level X other-orientation interaction predicted ethical decision frame adoption, *Exp[b]* = .95, $z(119) = 2.04$, $p = .04$ (see Figure 4). Simple slopes analysis (Aiken & West, 1991) revealed a positive, marginally significant effect of construal level on ethical decision frame adoption when other-orientation was low (-1 *SD*), *Exp[b]* = 1.12, *SE* = .65, $p = .08$, and a negative, but non-significant, effect of construal level on ethical decision frame adoption when other-orientation

was high (+1 *SD*), *Exp[b]* = -.64, *SE* = .53, $p > .1$. These results suggest that when other-orientation is high (and, corresponding, self-concern is low), lower levels of construal may increase the likelihood of adopting an ethical decision frame, as predicted by Hypothesis 3. When other-orientation is low, however, the effect of construal level on ethical decision frame adoption may instead become positive. For the decision to use cleaning wipes, however, the effect of the construal level X other-orientation interaction was not significant, *Exp[b]* = .25, $z(119) = 0.60$, $p > .1$.

The final set of analyses involved the continuous measure of ethical decision frame strength. For the decision to use hand sanitizer, the construal level X other-orientation interaction was again a significant predictor of ethical decision frame strength, $\beta = .36$, $t(118) = 2.09$, $p = .04$ (see Figure 5). Simple slopes analysis also suggested a similar pattern, with a positive, marginally significant effect of construal level on ethical decision frame strength at lower levels of other-orientation (-1 *SD*), $b = .82$, $SE = .47$, $p = .07$, and a negative, but non-significant, effect of construal level at high levels of other-orientation (+1 *SD*), $b = -.51$, $SE = .45$, $p > .1$. As with the dichotomous measure of ethical decision frame adoption, these results provided partial support for Hypothesis 3. For the decision to use cleaning wipes, the effect of the construal X other-orientation interaction was not significant, $\beta = .20$, $t(118) = .40$, $p > .1$. To summarize, analyses concerning the specific decision to use hand sanitizer were largely supportive of Hypothesis 3, although the positive effect of construal level at low levels of other-orientation (or, high levels of self-interest) was not anticipated and warrants further exploration. Hypothesis 3 was not supported by analyses concerning the decision to use cleaning wipes.

Second stage. Participants' actual safety performance in the laboratory (i.e., whether or not they used the hand sanitizer and cleaning wipes as instructed) provided the two dependent

variables for Study 3. Hypothesis 1 predicted that ethical decision frame adoption will lead to greater safety performance. The implicit (word-completion) measure of ethical framing predicted neither hand sanitizer use, nor cleaning wipe use (*p*s > .1). However, categorization of hand sanitizer use as an ethical decision significantly predicted participants' actual behavior, *Exp[b]* = 1.05, $z(121) = 2.22$, $p = .03$, as did participant ratings of the extent to which hand sanitizer use was perceived as an ethical decision (i.e., decision frame strength), *Exp[b]* = .43, $z(121) = 3.59$, $p < .001$. Similarly, the categorization-based measure of ethical frame predicted the use of cleaning wipes, *Exp[b]* = .89, $z(121) = 2.18$, $p = .03$, as did the rating-based measure, *Exp[b]* = .40, $z(121) = 3.00$, $p = .003$. Thus, Hypothesis 1 was supported across both dependent variables, and both context-specific measures of ethical decision frame. Participants who perceived safety performance decisions as ethical decisions were more likely to behave safely.

Moderated mediation. The complete moderated mediation model was tested for both dependent variables, using the continuous measure of ethical decision frame strength as the mediator. Models were estimated using the PROCESS package for SPSS (see Table 9). The index of moderated mediation provides of formal test of whether the moderation of an indirect effect differs statistically from zero (Hayes, 2015). For the model in which hand sanitizer use was the dependent variable, the estimated value of the index of moderated mediation was .31, and the corresponding 95% bias-corrected bootstrap confidence interval (with 5,000 iterations) excluded zero (.02, .75). At the mean level of other-orientation, the indirect effect of construal level on safety performance was non-significant, $b = .07$, $SE = .15$, $CI = (-.21, .38)$. When other-orientation was low (-1 *SD*), the estimated indirect effect increased in magnitude, although the bootstrap confidence interval still included zero, $b = .35$, $SE = .26$, $CI = (-.04, .94)$. When other-orientation was high (+1 *SD*), the estimated indirect effect was negative, although its confidence

interval again included zero, *b* = -.22, *SE* = .20, *CI* (-.72, .13). Overall, these results provide some support for moderated mediation, and for the overall theoretical model depicted in Figure 1. However, the positive effect of construal level at lower levels of other-orientation (i.e., higher levels of self-interest) was not hypothesized, and may account for the absence of a main effect of construal level on ethical decision frame adoption in these data (i.e., the unsupported Hypothesis 2).

For the model in which cleaning wipe use was the dependent variable, the estimated index of moderated mediation was .17, and the associated confidence interval included zero (-.10, .59). The indirect effect of construal level on safety performance via ethical decision frame was non-significant at the mean level of other-orientation, *b* = .23, *SE* = .16, *CI* (-.01, 65), and a high level (+1 *SD*) of other-orientation, *b* = .08, *SE* = .21, *CI* (-.32, .54). When other-orientation was low (-1 *SD*), the indirect effect of construal level was significant and positive, *b* = .39, *SE* = .25, *CI* (.02, .99). Thus, neither the pattern of indirect effects, nor the significance level of the omnibus test of moderated mediation, provided support for the hypothesized model. Possible interpretations of the differences in results between the two dependent variables are explored in the general discussion below. However, results for both dependent variables should be interpreted with some caution, as the number of participants enrolled in Study 3 may not provide adequate statistical power to detect small-to-moderate sized moderated mediation effects (Fritz & MacKinnon, 2007).

CHAPTER 10: GENERAL DISCUSSION

Summary

Overall, the results of three empirical studies provided mixed support for the theoretical model developed above and depicted in Figure 1. In Study 1, a quasi-experimental survey study conducted in an organizational setting, lower levels of construal were associated with more ethical framing of safety-related decisions (supporting Hypothesis 2). In Study 2, an experiment involving a naturalistic simulation, no construal level-ethical decision frame main effect was detected, but this link was moderated by other-orientation for some ethical decision frame measures (Hypothesis 3). Ethical decision framing also led to increased safety performance (Hypothesis 1) though, again, only for some measures. Thus, Hypotheses 1 and 3 were partially supported, while Hypothesis 2 was unsupported. Study 3, a laboratory experiment, also revealed no main effect of construal level on ethical decision framing. However, this link was moderated by measured other-orientation for one of the dependent variables (though the form of the interaction differed somewhat from expectations), and multiple measures of ethical decision framing predicted safety performance. Lastly, moderated mediation (Hypothesis 4) was supported for one dependent variable. Thus, Hypothesis 1, 3, and 4 were partially supported, while Hypothesis 2 was again unsupported.

Theoretical Implications

While further investigation is needed to reconcile the mixed empirical findings described above, several potential theoretical contributions merit discussion. In terms of workplace safety, three new factors (construal level, other-orientation, and ethical decision frames) are contributed

to the literature on the "proximal person" antecedents of safety performance. This application of ethical decision framing, in particular, may help to shed light on the "black box" of safety motivation. Given the fundamental of importance of harm-prevention in both ethics and safety, recognition of the ethical concerns inherent in safety performance may help to explain the drivers, or even meaning, of safety motivation.

Another potential contribution involves providing a new perspective on the relationship between construal level and ethical decision making. While some investigations have argued broadly for a positive relationship between construal level and ethical outcomes (e.g., Agerström & Björklund, 2009; Eyal et al., 2008; Tenbrunsel et al., 2010), others have found evidence of a negative relationship (Gong & Medin, 2012; Keeney & Hofmann, 2016). If the ethical domain is expanded to include prosocial outcomes (as proposed by Janoff-Bulman, Sheikh, & Hepp, 2009), still more evidence speaks to the ethical benefits of lower level construal (e.g., Jones & Rachlin, 2006; Small & Loewenstein, 2003; Small & Simonsohn, 2008). Further complicating the picture, some recent investigations have shown that the construal level-ethical decision making relationship may be influenced by a variety of potential moderators, including cultural context (Gamliel, Kreiner, & McElroy, 2017), and the type of ethical consideration at stake (e.g., distributive vs. interactional justice; Cojuharenco et al., 2011).

This dissertation addresses the complexity of the construal level-ethical decision making relationship in three ways. First, I focus on the link between construal level and a specific, early, stage in the ethical decision making process (i.e., ethical decision frame adoption, which is roughly analogous to moral awareness; Tenbrunsel & Smith-Crowe, 2008). Awareness that one is making an ethical decision is not sufficient to guarantee outcomes at more distal stages in the

process (i.e., intentions, behavior; Jones, 1991), so findings pertaining to one stage may not generalize to others.

Second, this research follows other recent investigations (e.g., Cojuharenco et al., 2011; Gamliel et al., 2017) in proposing a novel boundary condition of the construal level-ethical decision frame link (other-orientation). This boundary condition might help to explain apparent discrepancies in the extant literature involving studies in which this variable was unmeasured. Third, and perhaps most importantly, this investigation emphasizes the importance of context. In keeping with the logic of construal fit (Berson & Halevy, 2014), the level of construal most likely to promote an ethical outcome may simply be the one that best aligns with that particular decision context. The effect of construal level on ethical decision frame adoption I hypothesize and test is specific to the context of safety-related decisions. I identify contextual factors that make this particular setting distinct, but might also contribute to divergent findings in prior work, including: negative vs. positive goals (Dorner, 1989), prevention vs. promotion focus (Higgins, 1997), and present- vs. future-focused dependent variables.

In terms of the behavioral ethics literature more broadly, this research responds to calls to use the decision frame construct as a means of better understanding ethical decision making processes (Kreps & Monin, 2011; Tenbrunsel & Messick, 2004; Tenbrunsel & Smith-Crowe, 2008), by identifying a novel antecedent (construal level) and boundary condition (other-orientation). Additionally, the current research represents one of the first investigations of ethical decision frames in an organizational setting (Study 1), and the first application in the context of safety. This research also responds to calls for the utilization of more novel dependent variables in ethics-related research, and for making the study of behavioral ethics more organizationally grounded (Brief & Smith-Crowe, 2016; Smith-Crowe & Zheng, 2016; Tenbrunsel & Smith-

Crowe, 2008; Warren & Smith-Crowe, 2008). Considerable conceptual overlap exists between ethics and safety (i.e., harm prevention), and exploring that intersection may prove valuable to both fields. While the current research utilizes ethical decision making theories to predict safety outcomes, reciprocal efforts might be made to harness insights and interventions from the safety literature (e.g., safety climate) to influence ethics-related outcomes.

Lastly, this research makes a modest contribution to the ongoing debate concerning the nature of the relationship between other-orientation and self-interest. While some models conceptualize other-orientation and self-interest as endpoints of a single, bipolar continuum (e.g., the theory of other-orientation; Meglino & Korsgaard, 2004, 2007), others argue they are better viewed as independent, orthogonal constructs (e.g., the self-concern and other-orientation as moderators hypothesis; De Dreu & Nauta, 2009). I argue that the relevance of this distinction may be context dependent—if an individual has finite resources to allocate between other- and self-focused concerns, it may indeed be appropriate to conceptualize the two in terms of a single, continuous measure. The results of Studies 2 and 3, however, are much more consistent with the view that other-orientation and self-interest are distinct constructs. In both studies, measures of other-orientation and self-interest were positively correlated, a result which is difficult to reconcile with the single-construct view.

Practical Implications

Workplace safety is a particularly important area for organizational scholarship to target with practically-applicable findings. In 2015 alone, 4,836 U.S. employees were killed in workplace accidents, and another 4.8 million suffered injuries requiring medical attention. The estimated economic impact of these deaths and injuries was $206 billion (National Safety

Council, 2016). Yet, despite these risks, workers often choose not to follow safety performance standards (e.g., Hofmann & Stetzer, 1996).

The current research tackles a specific dilemma, which may help to shed new light on this disconnect. The ethical content of safety (i.e., harm prevention) suggests that workers perhaps *should* view safety performance as ethically obligatory. Ample evidence, from a variety of literatures, suggests that holding this view will have positive consequences for safety performance. However, the harm associated with safety performance will generally feel quite distal from the individual worker's perspective (the macro-level statistics given above notwithstanding, accident base-rates tend to be quite low; Zohar, 2002). Because ethical judgment is sensitive to probability (Jones, 1991), the ethical content of safety performance may therefore be overlooked.

Construal level-based interventions offer a potential practical solution to this dilemma. Small variations in the content of messages can produce significant changes in employee mindsets and behaviors (Cialdini, 2003; Crum & Langer, 2007; Grant & Hofmann, 2011), and even common material symbols can play an important role in ethical decision making (Desai & Kouchaki, 2017). The story of the Iron Ring illustrates how a subtle cue, connected to a salient message, can make safety-related outcomes appear more concrete, more ethically-laden, and more motivating. This is not to suggest that encouraging employees to adopt lower levels of construal is a silver bullet. Prior work has revealed many organizational benefits to higher levels of employee construal (see Weisenfeld et al., 2017). Instead, the findings of this dissertation suggest that construal-lowering interventions might be targeted to specific, safety-critical times, locations, and situations, or to employees who might have greater need to "see the trees" (e.g.,

older, more powerful, or more experienced employees, who may have higher trait levels of construal).

Limitations and Future Directions

As the mixed empirical findings illustrate, this research also involves a number of limitations that must be carefully considered. Inconsistent results between studies are a major source of concern. Hypothesis 2, which predicted a direct, negative effect of construal level on ethical decision frame adoption, was supported in Study 1, but not supported in Studies 2 and 3. One possible interpretation of the non-support revealed in Study 3 is that all conditions activated self-interest to some extent—the signage made reference to the possibility of catching the flu in all conditions, which might have overpowered the other-orientation manipulation. Given that low levels of other-orientation (or high levels of self-interest) are predicted to attenuate the relationship between construal level and ethical decision frame adoption, this could explain the lack of support for Hypothesis 2. The non-support of Hypothesis 2 in Study 2 is more concerning, because the study design included no plausible threat of harm to participants themselves.

Another possible interpretation for this inconsistency is that Studies 2 and 3 may have involved range restriction in terms of construal level, because they were conducted in the laboratory. The laboratory is an inherently artificial setting, which might restrict participants' ability to become "lost in the trees." While the experienced offshore drilling workers who took part in Study 1 might realistically focus on the minutiae of task performance at the expense of higher-level concerns, the novelty of the tasks involved in Studies 2 and 3 might have prevented participants from doing the same.

One additional possibility is that the outcome variables in Studies 1-3 may not be readily comparable. In Study 1, I assessed participants' framing of actual safety standards established by their real-world employer. In Study 2, I instead measured participants' resource allocations to safety in an unfamiliar—and hypothetical—simulation. In Study 3, I observed participants' self- and other-focused hygiene behaviors. In the domain of behavioral ethics, the outcome variable under study has important implications (Smith-Crowe & Zhang, 2016), and different outcomes can create barriers to generalizability across studies. The dependent variables described above might differ in the degree to which they invoke self-interest, in the degree to which they are perceived to be obligatory (vs. discretionary), and in their naturalism. Future investigations should attempt to establish generalizability by using more similar dependent variable operationalizations across studies.

A second significant empirical concern is the lack of convergence between measures intended to operationalize the same construct in Studies 2 and 3. In particular, measures of both ethical decision framing and other-orientation were weakly, or non-significantly, correlated with one another in both studies. Non-significant results involving the implicit word-completion measure may be relatively straightforward to explain. The theoretical arguments in this dissertation are grounded in the context of safety-related decisions, and the other measures included in Studies 2 and 3 share that grounding (e.g., categorizing a specific decision as an ethical decision or some other type). The word completion measure, in contrast, measures the general accessibility of ethics-related concepts (Shu et al., 2011), and may therefore be more comparable to the general moral disengagement measure included in Study 1 (which was also unrelated to construal level). Several other discrepancies are more difficult to reconcile, and suggest greater caution in interpreting results, including: cases in which the same measures led to

different results across studies (e.g., the explicit measures of ethical decision framing in Study 2 vs. Study 3), and cases in which different measures of the same construct led to different results within the same study (e.g., the implicit word- and sentence-completion measures of other-orientation in Study 3). Because ethical decision frame adoption was the only mediator hypothesized and tested in this research, identifying and measuring other potential mediators might shed new light on these results.

In Study 3, two additional empirical concerns were raised. First, the experimental manipulation of other-orientation vs. self-interest was unsuccessful. One possible explanation is given above (i.e., self-interest may have been salient in all conditions), but this does not fully explain the complete lack of effect on the manipulation check, or on the other, previously-validated, measures of other-orientation included in the study. Secondly, the results of Study 3 differed significantly across dependent variables. While several hypotheses were supported when analyzing the hand sanitizer use dependent variable, those results did not replicate with the cleaning wipe use dependent variable. One possible interpretation is simply that the "Lab Health and Safety Guidelines" were more salient at the time that hand sanitizer use was observed. This occurred shortly after participants were first exposed to the manipulation and read the study instructions. In contrast, the opportunity to use cleaning wipes arose after participants spent several minutes assembling a model car, which may have provided a significant distraction. Also, while hand-sanitizer use could be interpreted as preventing either personal or interpersonal harm, it is difficult to imagine personal harm arising from failure to use the cleaning wipes.

The results of Study 3 suggest broader questions about the generalizability of this work. While the research participants in Studies 1 and 2 were drawn from very different populations, the context of the studies themselves was fairly similar. Safety is generally very salient in the

offshore drilling industry, and is also made quite salient by the Deepwater simulation. Although Study 3 did introduce a different context, the salience of health and safety issues was still conveyed through both laboratory signage and experimenter instructions. Could the theoretical model developed in this dissertation generalize to contexts in which safety is less salient? On the one hand, the theoretical arguments presented here in terms of safety-related decisions might extend to risk-related decisions (which still convey the possibility of harm) more broadly, suggesting applicability to wider range of organizational contexts (e.g., financial services). On the other hand, if workers lack awareness that they are even making a safety- or risk-related decision (e.g., in organizations with weak risk- or safety-cultures, or environments in which adverse safety outcomes are genuinely not plausible), the construal level-based arguments advanced in this dissertation may not be applicable. This seems to suggest some initial awareness that one is in a safety- or risk-relevant setting is a necessary antecedent of the effects described in this paper.

Another unanticipated result is the finding, in Studies 2 and 3, that *higher* levels of construal may promote ethical decision frame adoption, and therefore safety performance, among individuals low in other-orientation (or high in self-concern). This finding indicates that, while this dissertation provides some novel insights into the relationship between construal level and ethical decision making, it falls short of fulling explaining this puzzle. One potentially promising future direction is to distinguish between *types* of ethical decision making. While contemporary theories suggest that ethical decision making is primarily intuitive (e.g., Gray, Young, & Waytz, 2012; Haidt, 2001; Reynolds, 2006); deliberative, or rational, processes likely still play a role in some cases. The dual-process model of moral judgment (Greene, Nystrom, Engell, Darley, & Cohen, 2004; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001;

Greene, 2007) proposes that intuitive processes are operative in deontological, or rule-based, ethical decision making, and are activated by relatively strong contextual cues (e.g., salient harm to others). When such cues are weaker or altogether absent, however, people may instead engage in consequentialist, or outcome-based, ethical decision making, which involves more deliberative reasoning. For people low in other-orientation, situational cues indicating potential harm to others will be less salient and motivating. Such individuals might be better equipped to recognize the ethical content of their decisions through more deliberative, consequentialist reasoning. Indeed, one prior investigation has explicitly linked lower levels of constural to more deontological ethical decision making (Amit & Greene, 2012).

A particularly important future direction for this research is to test the complete theoretical model in an organizational context. Study 1 provides some evidence for the generalizability of this work to organizational settings, but lacks a behavioral outcome of ethical decision frame adoption, and does not take the moderating role of other-orientation into account. Moreover, an organizational test of this model would allow it to be better integrated with existing models of workplace safety, by also incorporating effects of organizational (e.g., safety climate) and personal (e.g., conscientiousness) factors that have been shown to predict safety performance and motivation in prior research. Future field research should also test for potential differences between facets of safety performance (e.g., safety compliance vs. safety participation). While meta-analytic evidence suggests that safety compliance and participation tend to be strongly correlated, and responsive to similar antecedents (Christian et al., 2009; Clarke, 2006a), the arguments advanced in this dissertation might prove particularly relevant to safety participation, due to its discretionary and other-focused nature.

TABLE 1

Study 1: Means, Standard Deviations, and Correlations

Variable	N	Mean	SD	1	2	3	4	5
1. Construal level manipulation	74	0.50	0.50	--				
2. Manipulation check (1st)	74	4.13	1.84	0.29*	(.62)			
3. Manipulation check (2nd)	74	4.01	2.73	0.90**	0.27*	--		
4. Ethical decision frame	74	6.22	1.35	-0.25*	0.11	-0.28**	(.98)	
5. Moral disengagement	74	2.17	1.04	0.00	-0.23*	0.01	-0.30**	(.86)
6. Age	74	37.92	7.94	0.09	0.13	0.04	0.17	-0.22
7. Job tenure	74	4.83	4.11	0.04	0.09	0.03	0.05	-0.04
8. Industry tenure	74	12.94	8.05	0.12	0.08	0.06	0.07	-0.07
9. Organizational tenure	74	15.42	8.60	0.09	0.12	0.03	0.16	-0.16

(Table 1 continued)

Variable	6	7	8
6. Age	--		
7. Job tenure	0.51**	--	
8. Industry tenure	0.66**	0.40**	--
9. Organizational tenure	0.89**	0.53**	0.80**

***p* < .05, ****p* < .01**
Construal level manipulation: 0=low-level; 1=high-level
Scale reliabilities (Cronbach's Alpha) reported on the diagonal.

TABLE 2

Study 1: Model Results for Ethical Decision Frame and Moral Disengagement, Regressed on Construal Level Manipulation

	Ethical Decision Frame			Moral Disengagement		
Variable	***B***	***SE***	***t***	***B***	***SE***	***t***
Constant	6.48	0.27	24.1**	1.98	0.21	9.35**
Construal level	-0.68	0.31	-2.21*	0.01	0.24	0.03
Time pressure[a]	0.15	0.31	0.49	0.37	0.24	1.52

***N* = 74. Unstandardized regression coefficients are reported.**
[a]Time pressure manipulation included as control variable.
***$p < .05$, **$p < .01$**

TABLE 3

Study 2: Means, Standard Deviations, and Correlations among All Measured Variables

Variable	N	Mean	SD	1	2	3	4	5
1. Construal level manipulation	79	0.53	0.50	--				
2. Manipulation check	79	4.53	2.00	0.24*	--			
3. Psychological distance	79	3.61	1.32	-0.01	0.18	(.92)		
4. Safety spending (Rd. 1)	79	2.65M	3.46M	-0.27*	0.14	0.11	--	
5. Safety spending (Total)	79	12.8M	12.5M	-0.19	0.24*	0.07	0.78**	--
6. Ethical frame (coded)	79	0.16	0.37	-0.13	0.35**	0.14	0.39**	0.40**
7. Ethical frame (implicit)	79	0.21	0.25	-0.07	0.09	0.01	-0.02	-0.03
8. Ethical frame (explicit, categ.)	79	0.51	0.50	-0.06	0.09	0.02	0.05	0.10
9. Ethical frame (explicit, cont.)	79	6.00	1.34	0.00	0.18	0.33**	0.00	0.09
10. Other-orientation	79	3.63	1.76	0.00	0.26*	0.35**	0.29*	0.37**
11. Self-interest	79	4.64	1.86	-0.15	-0.07	0.22	0.13	0.19

(Table 3 continued)

Variable	6	7	8	9	10
6. Ethical frame (coded)	--				
7. Ethical frame (implicit)	0.09	--			
8. Ethical frame (explicit, categ.)	0.03	-0.06	--		
9. Ethical frame (explicit, cont.)	0.15	0.04	0.32**	--	
10. Other-orientation	0.33**	0.04	0.29**	0.51**	--
11. Self-interest	0.18	0.03	-0.18	-0.11	0.17

N = 79
Construal level manipulation: 0=low-level; 1=high-level
Scale reliabilities (Cronbach's Alpha) reported on the diagonal.
$^{\dagger}p < .10$, $*p < .05$, $**p < .01$

TABLE 4

Study 2: First Stage Logistic Regression Results for Ethical Decision Frame Adoption, Regressed on Construal Level and Other-Orientation

	Model 1			Model 2		
Variable	***Exp[b]***	***SE***	***z***	***Exp[b]***	***SE***	***z***
Constant	-6.37	2.73	-2.34*	-34.2	13.7	-2.50*
Construal level	-0.90	0.85	-1.06	33.6	14.9	-2.25*
Other-orientation	1.13	0.41	2.78**	6.20	2.46	2.52*
Construal * Other-orientation				-5.86	2.48	-2.36*

***N* = 79. Binary logistic regression coefficients are reported.**
Construal level: 0=low-level; 1=high-level
Study session week and day included as controls, but not reported here.
$^{*}p < .05$, $^{**}p < .01$

TABLE 5

Study 2: Second Stage Model Results for Safety Spending (Round 1 and Overall) Regressed on Ethical Decision Frame Adoption

	Safety Spending (Rd. 1)			Safety Spending (Total)		
Variable	***B***	***SE***	***t***	***B***	***SE***	***t***
Constant	3.78	1.42	2.67**	16.3	5.06	3.21**
Ethical decision frame	3.67	0.99	3.67**	14.1	3.57	3.94**

***N* = 79. Unstandardized regression coefficients are reported.**
Construal level: 0=low-level; 1=high-level
Study session week and day included as controls, but not reported here.
$^{*}p < .05$, $^{**}p < .01$

TABLE 6

Study 3: Means, Standard Deviations, and Correlations among All Measured Variables

Variable	N	Mean	SD	1	2	3	4	5
1. Construal level	123	0.49	0.50	--				
2. Other-orientation [a]	123	0.49	0.50	-0.07	--			
3. Construal level (manip. check)	123	-0.11	3.68	0.98**	-0.08	--		
4. Other-orientation (manip. check)	123	2.39	1.56	0.06	-0.15	0.03	--	
5. Self-interest	123	2.00	1.36	0.18	-0.01	0.16	0.56**	--
6. Hand sanitizer use	123	0.72	0.45	-0.07	0.07	-0.07	0.13	0.09
7. Wipes use	123	0.35	0.48	0.07	-0.23**	0.07	0.04	-0.02
8. Hand sanitizer ethical (categ.)	123	2.20	1.23	-0.17	0.16	-0.18*	-0.04	-0.10
9. Wipes ethical (categ.)	123	2.47	1.22	0.08	-0.04	0.04	0.00	-0.09
10. Hand sanitizer ethical (cont.)	123	4.56	1.77	0.04	-0.08	0.02	0.28**	0.09
11. Wipes ethical (cont.)	123	4.40	1.77	0.16	-0.16	0.14	0.19*	0.02
12. Ethical frame (implicit)	123	0.62	0.72	0.18*	-0.12	0.18	-0.09	-0.11
13. Other-orientation (word-comp.)	123	1.17	0.93	0.03	-0.07	0.04	-0.10	-0.11
14. Other-orientation (sentences)	123	2.54	1.25	0.01	0.15	0.02	0.02	-0.07

(Table 6 continued)

Variable	6	7	8	9	10	11	12	13
6. Hand sanitizer use	--							
7. Wipes use	0.27**	--						
8. Hand sanitizer ethical (categ.)	0.23**	0.06	--					
9. Wipes ethical (categ.)	0.11	0.23**	0.45**	--				
10. Hand sanitizer ethical (cont.)	0.33**	0.26**	0.22*	0.16	--			
11. Wipes ethical (cont.)	0.23**	0.30**	0.19*	0.30**	0.66**	--		
12. Ethical frame (implicit)	-0.11	0.03	0.16	0.09	-0.02	0.02	--	
13. Other-orientation (word-comp.)	-0.02	0.03	0.02	0.00	-0.14	-0.00	-0.02	--
14. Other-orientation (sentences)	0.07	0.12	0.04	0.00	0.12	0.07	0.00	0.04

N=123
[a] Unsuccessful manipulation (included as control)
Construal level: 0=low-level condition; 2=high-level condition
Hand sanitizer use/wipes use: 0=no; 2=yes
† *p* < .10, **p* < .05, ***p* < .01

TABLE 7

Study 3: First Stage Logistic Regression Results for Ethical Decision Frame Adoption (Categorical Measure), Regressed on Construal Level and Other-Orientation

Hand sanitizer dependent variable

	Model 1			Model 2		
Variable	***Exp[b]***	***SE***	***z***	***Exp[b]***	***SE***	***z***
Constant	-0.08	0.35	-0.22	0.45	0.44	1.02
Construal level	0.10	0.39	0.27	-0.87	0.61	-1.42
Other-orientation [a]	-0.51	0.22	-2.30*	-1.05	0.37	-2.84**
Construal * Other-orientation				0.94	0.44	2.03*

Cleaning wipes dependent variable

	Model 1			Model 2		
Variable	***Exp[b]***	***SE***	***z***	***Exp[b]***	***SE***	***z***
Constant	-0.73	0.35	-2.05*	-0.57	0.43	-1.32
Construal level	0.77	0.37	2.05*	0.48	0.60	0.81
Other-orientation [a]	-0.03	0.21	-0.17	-0.17	0.31	-0.56
Construal * Other-orientation				-0.57	0.43	-1.32

***N* = 123.**
Binary logistic regression coefficients are reported.
Construal level: 0=low-level; 1=high-level
[a] Coded such that higher values indicate *lower* other-orientation
***p* < .05, **p* < .01**

TABLE 8

Study 3: First Stage OLS Regression Results for Ethical Decision Frame Strength (Rating-Scale Measure), Regressed on Construal Level and Other-Orientation

Hand sanitizer dependent variable

	Model 1			Model 2		
Variable	***B***	***SE***	***t***	***B***	***SE***	***t***
Constant	4.81	0.30	16.16**	5.24	0.36	14.62**
Construal level	0.16	0.32	0.49	-0.68	0.51	-1.33
Other-orientation	-0.28	0.17	-1.60	-0.65	0.25	-2.64*
Construal * Other-orientation				0.71	0.34	2.09*

Cleaning wipes dependent variable

	Model 1			Model 2		
Variable	***B***	***SE***	***t***	***B***	***SE***	***t***
Constant	4.14	0.30	13.95**	4.38	0.36	12.11**
Construal level	0.56	0.32	1.75	0.09	0.51	0.17
Other-orientation	-0.01	0.17	-0.07	-0.22	0.25	-0.90
Construal * Other-orientation				0.40	0.34	1.16

***N* = 123.**
Unstandardized regression coefficients are reported.
Construal level: 0=low-level; 1=high-level
[a] Coded such that higher values indicate *lower* other-orientation
***$p < .05$, **$p < .01$**

TABLE 9

Study 3: Indirect Effect (via Ethical Decision Framing) on Safety Performance Conditional on Other-Orientation.

Hand sanitizer dependent variable

		95% CI	
Variable	**Indirect Effect**	**LL**	**UL**
Construal level (-1 SD Other-orientation)	.35	-0.04	0.94
Construal level (Mean Other-orientation)	.07	-0.21	0.38
Construal level (+1 SD Other-orientation)	-.22	-0.72	0.13

Cleaning wipes dependent variable

		95% CI	
Variable	**Indirect Effect**	**LL**	**UL**
Construal level (-1 SD Other-orientation)	.39	0.02	0.9i
Construal level (Mean Other-orientation)	.23	-0.01	0.65
Construal level (+1 SD Other-orientation)	.08	-0.32	0.54

***N* = 123.**
CI = 95% confidence interval computed using bias corrected percentile method; LL = lower limit; UL= upper limit.
Unstandardized regression coefficients are reported. Bootstrap sample size 5,000.

FIGURE 1

Complete Theoretical Model

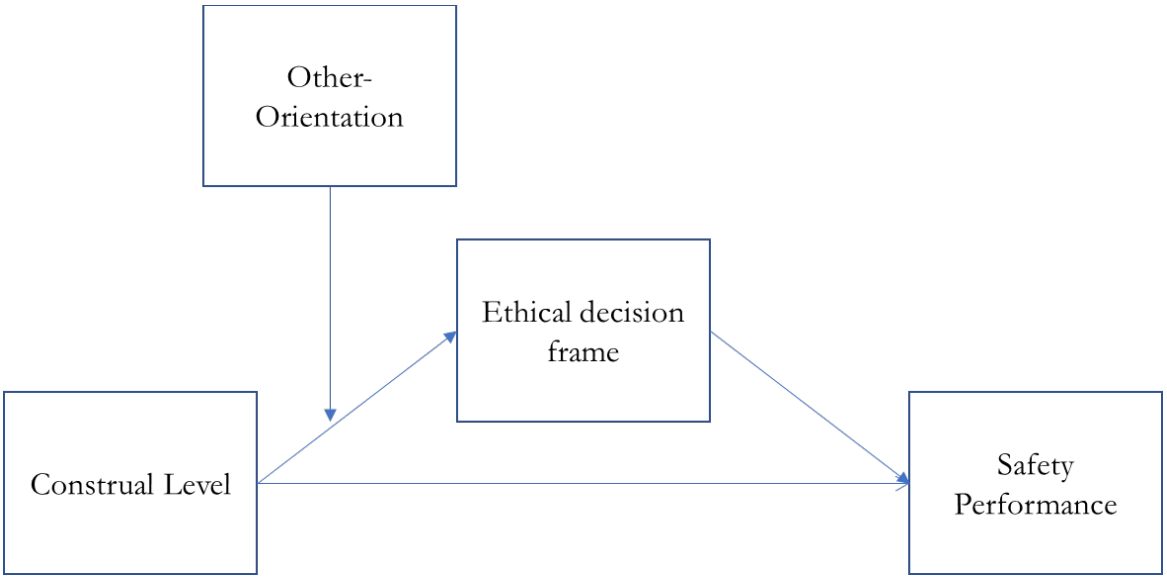


FIGURE 2

Study 1: Ethical Decision Frame by Manipulated Construal Level

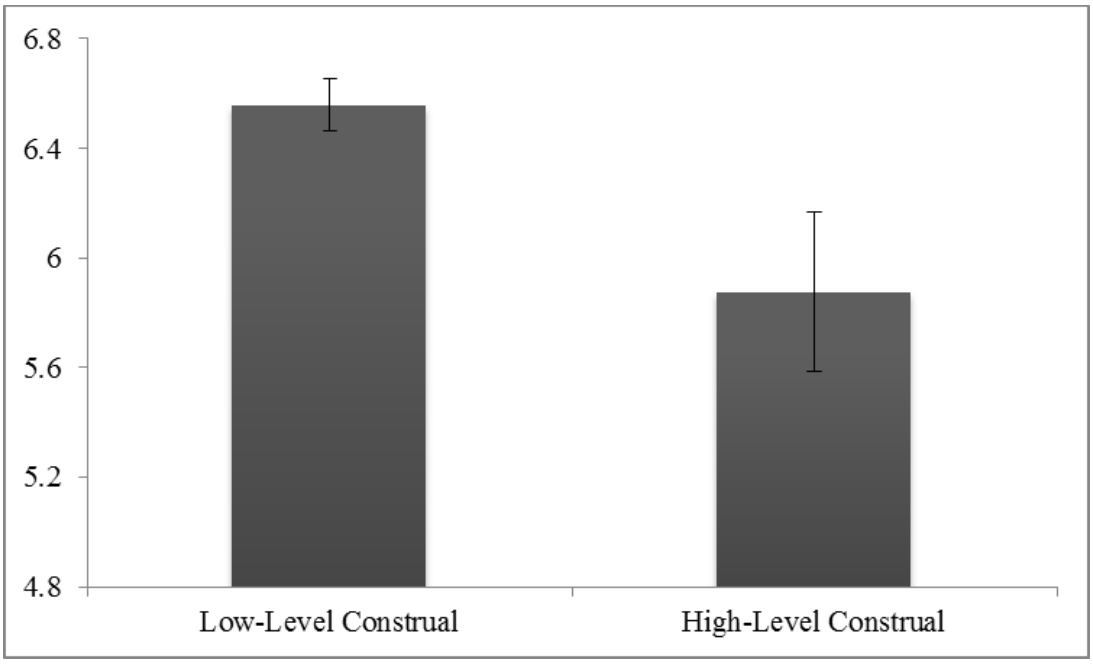


Figure 2. Ethical decision frame by manipulated construal level (Study 1).

FIGURE 3

Study 2: Predictive Margins for Ethical Decision Frame Adoption (Dichotomous Outcome) by Construal Level Condition and Other-Orientation (+/- 1 Standard Deviation)

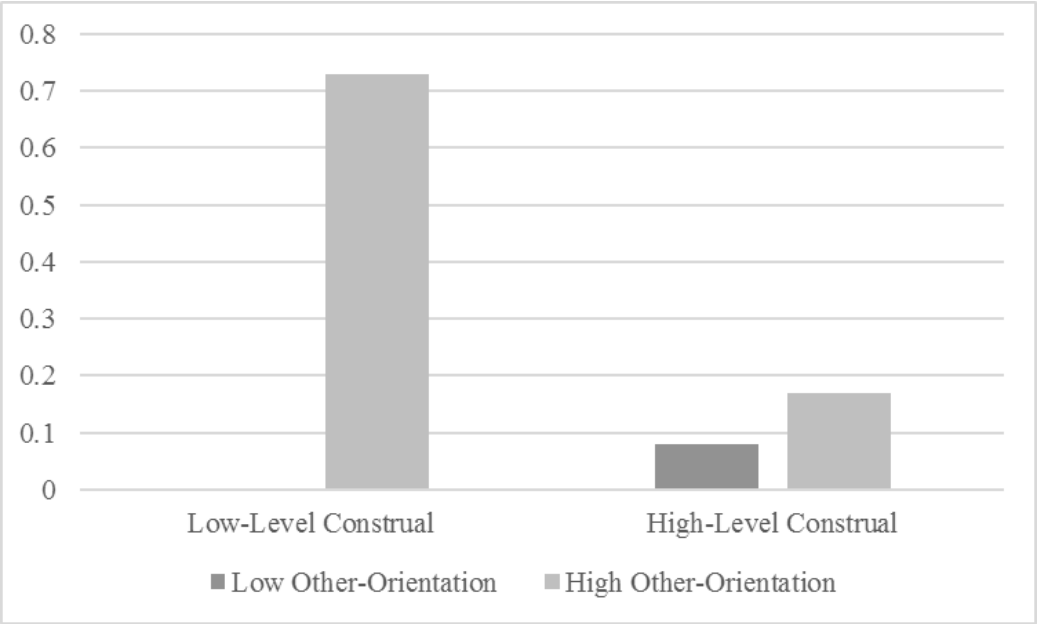


FIGURE 4

Study 3: Ethical Decision Frame Adoption (Categorical Measure) by Construal Level and Other-Orientation (OO)

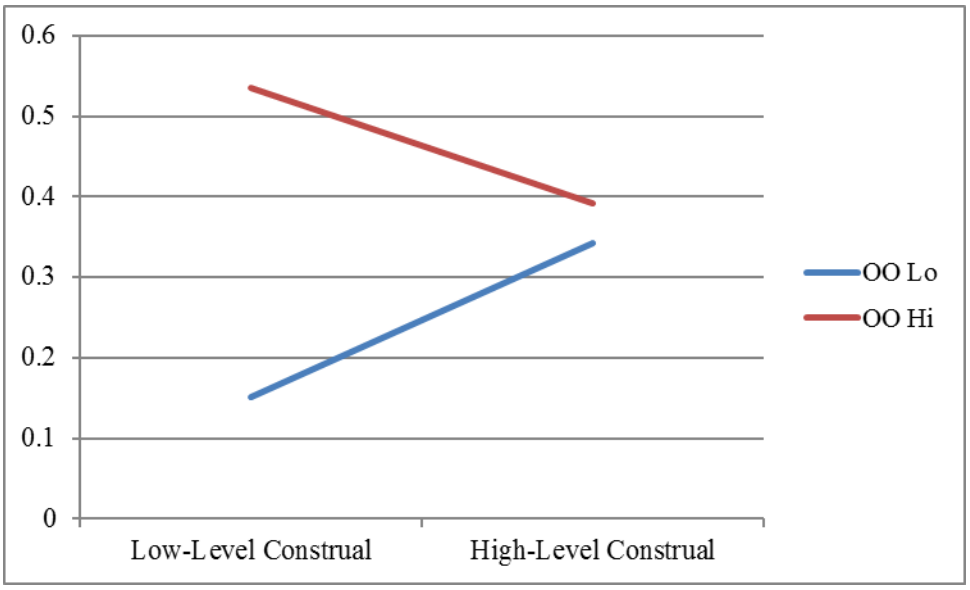
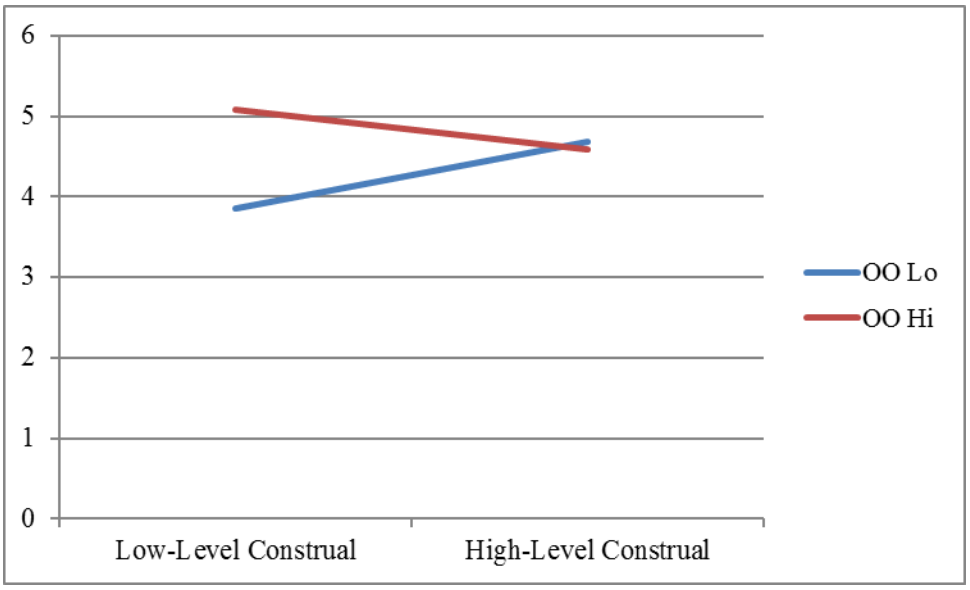


FIGURE 5

Study 3: Ethical Decision Frame Strength (Continuous Measure) by Construal Level and Other-Orientation (OO)



APPENDIX A. MATERIALS FOR STUDY 1

Introduction

Dear Participant,

Thank you for agreeing to take part in our study today. We are interested in your perspective on workplace safety, as well as some of your thoughts and attitudes about your workplace more generally. When you are ready, please click the button below to begin work on the survey. This should take you no more than 15 minutes to complete.

Thank you for your time!

High-Level Construal Manipulation, Part 1

Please describe 2-3 things you notice in this photo of the *America*.

THEN

Please describe 2-3 things you notice in this photo of the *BlackHawk*.

THEN

Please describe 2-3 things you notice in this photo of the *Confidence*.

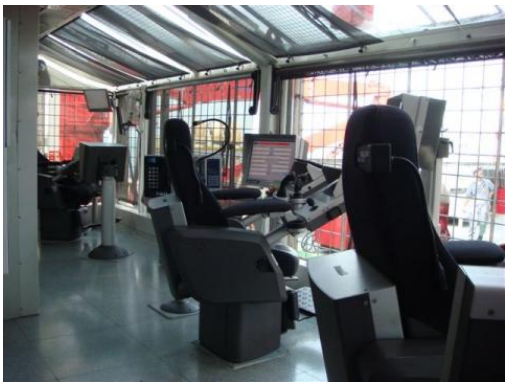
High-Level Construal Manipulation, Part 2

{Preceding photos are all displayed on screen}

Now, have a look at these photos again. Then, please respond to the prompt below:

Please provide 3-4 thoughts as to why employees might make safety in the workplace a priority.

Low-Level Construal Manipulation, Part 1



Please describe 2-3 things you notice in this photo of the doghouse.

THEN

Please describe 2-3 things you notice in this photo of the drill floor.

THEN

Please describe 2-3 things you notice in this photo of the mud mix area.

Low-Level Construal Manipulation, Part 2

{Preceding photos are all displayed on screen}

Now, have a look at these photos again. Then, please respond to the prompt below:

Please provide 3-4 thoughts as to how employees might make safety in the workplace a priority.

Ethical Decision Frame

{Response scale: 1 = Strongly disagree; 7 = Strongly agree}

Some, but not all, of the choices people make at work involve ethical issues. We are interested in the extent to which you think each of the following choices involve ethical issues. For each item, please indicate your level of agreement with the statement:

"This choice involves ethical issues."

1. Wearing appropriate PPE (safety glasses, hard hat, etc.)
2. Making sure others are wearing appropriate PPE
3. Using fall protection if working at height
4. Using the type of gloves specified by the JSA (vs. using whatever gloves you have handy)
5. Using push sticks when dealing with suspended loads
6. Conducting/participating in after action reviews
7. Following every step of the JSA
8. Keeping equipment inspections current
9. Maintaining a clean and organized work station
10. Making proactive suggestions about how to make work safer

Moral disengagement

{Response scale: 1 = Strongly disagree; 7 = Strongly agree}

The following items deal with your attitudes more generally. Please indicate your level of agreement or disagreement with each of the following statements:

1. It is okay to spread rumors to defend those you care about.
2. Taking something without the owner's permission is okay as long as you're just borrowing it.
3. Considering the ways people grossly misrepresent themselves, it's hardly a sin to inflate your own credentials a bit.
4. People shouldn't be held accountable for doing questionable things when they were just doing what an authority figure told them to do.
5. People can't be blamed for doing things that are technically wrong when all their friends are doing it too.
6. Taking personal credit for ideas that were not your own is no big deal.
7. Some people have to be treated roughly because they lack feelings that can be hurt.
8. People who get mistreated have usually done something to bring it on themselves.

Demographics

Please answer the questions below:

What is your gender?
1. Male
2. Female

How old are you (in years)?

What is your highest level of education completed?
1. Did not complete high school
2. High school/GED
3. Some college
4. Vocational/technical degree
5. Bachelor's degree
6. Advanced degree

What is your current position title?

How long have you held this position (in years)?

How long have you worked for [organization] (in years)?

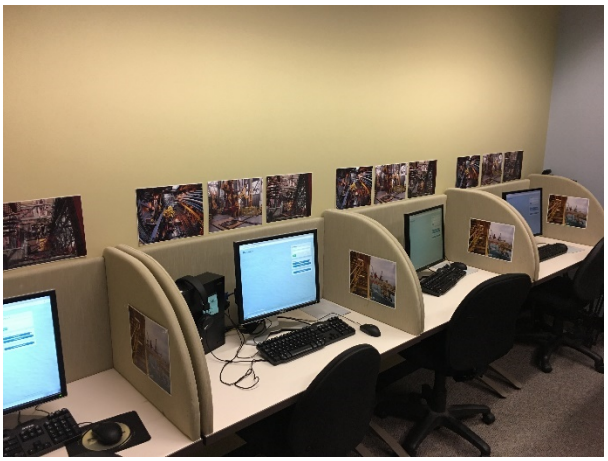
How long have you worked in the offshore industry (in years)?

You have reached the end of the survey. Thank you again for your participation!

APPENDIX B. MATERIALS FOR STUDY 2

Laboratory Setup

High-level construal condition



Low-level construal condition

Introduction

Please enter your User Name for the Deepwater Sim.

Knowledge Quiz

The following questions test your knowledge of the details of the simulation. If you answer any of these questions incorrectly, you will receive an error message from the survey software until you correct your response.

If you need help answering any of these questions, or are unclear on any of the simulation details, please ask the experimenter for help.

1. Which of the following factors does not affect your risk of a blowout?
    a. Condition of the blowout preventer
    b. Operating condition of the rig and its equipment
    c. Weather
    d. Amount of oil produced
    e. Number of workers employed

2. Which of the following factors does not affect your profitability each round?

a. Amount of oil produced
b. Amount spent on safety programs
c. Choice of pollution control equipment
d. Price of oil
e. All of these affect your profitability

3. What is the recommended minimum amount to spend on rig maintenance?

a. $5/bbl
b. $6/bbl
c. $8/bbl
d. $12/bbl
e. $50/bbl

4. What is the recommended minimum amount to spend on safety programs (per round)?

a. $0.2 million
b. $1.0 million
c. $1.2 million
d. $2.0 million
e. $2.2 million

5. What is the recommended maximum number of hours per worker?

a. 40 hours
b. 52 hours
c. 58 hours
d. 65 hours
e. 98 hours

6. For maximum safety, what percentage of workers is recommended to receive off-rig training during the simulation?

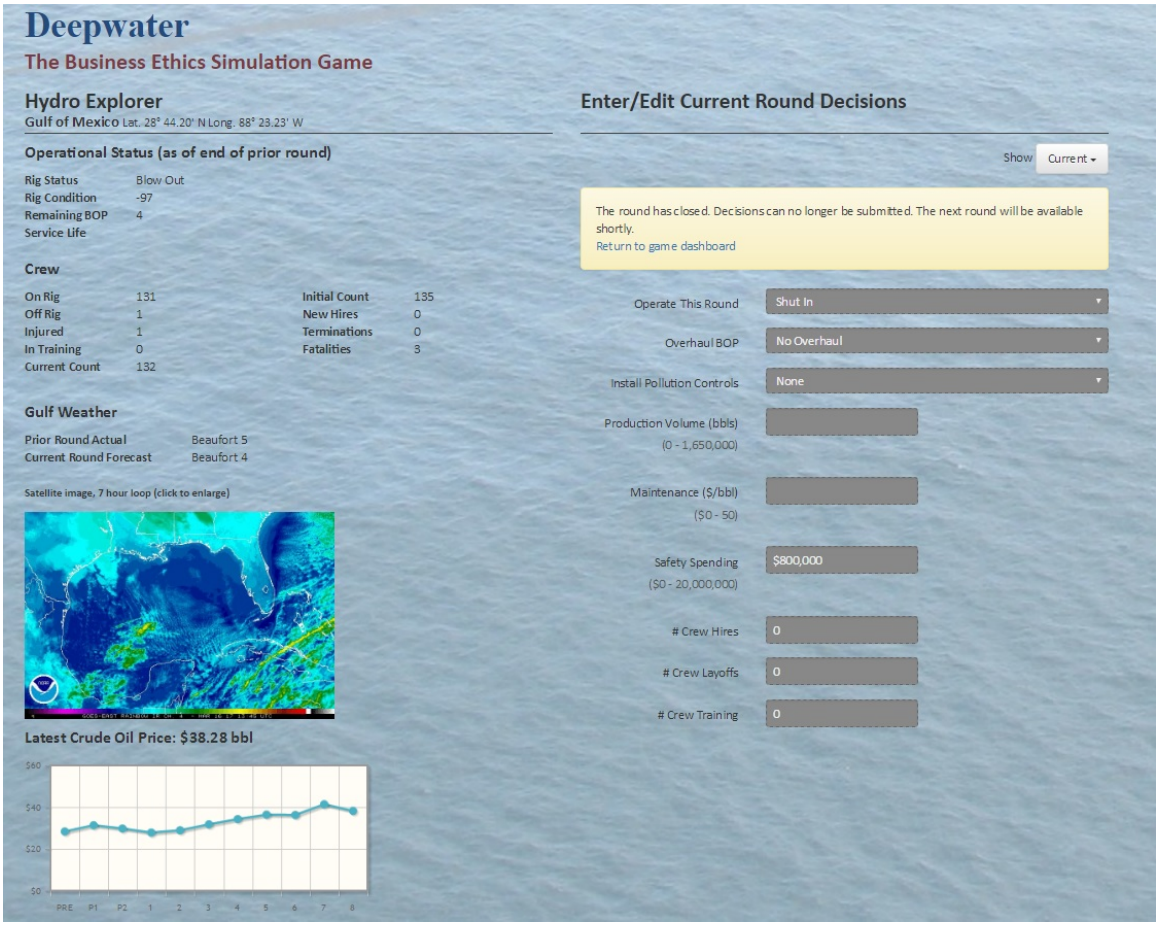
a. 10 percent
b. 20 percent
c. 30 percent
d. 50 percent
e. 100 percent

7. Which of the following does not directly reduce the likelihood of accidents and injuries during the simulation?

a. Firing workers
b. Spending more on safety programs
c. Reducing production
d. Training workers
e. Reducing the number of hours per worker

Thank you! You may now review your Participant Handbook and other materials until the simulation begins.

Deepwater Simulation Decision Entry Screen



Decision Making Room Survey

Welcome to the Decision Making Room! Around your workstation you will see photographs of offshore drilling vessels like the one you'll be managing in today's simulation.

Please take a moment to look at these photos.

Schedule

You will now begin work on the competitive rounds of the simulation. There will be six rounds in total. The schedule for those rounds is below.

Round 1 Deadline: 6:55pm
Round 2 Deadline: 7:10pm
Round 3 Deadline: 7:25pm
Round 4 Deadline: 7:45pm
Round 5 Deadline: 8:00pm
Round 6 Deadline: 8:15pm
The experimenter will notify you when you have two minutes left in each round, at which point you should enter your decisions immediately, if you have not done so already. The experimenter will also notify you when each round is concluded.

Before you enter your decisions for Round 1, you will be asked to respond to a few short survey items. At the conclusion of each round, you should review your rig's performance and the "Market Report," and then return to this survey.

Please click the arrow below when you are ready to begin.

Manipulation Check (pre-Round 1)

Please spend 2-3 minutes writing about your strategy for the simulation. That is, what do you hope to accomplish?

Behavioral Identification Form (Construal Level Manipulation Check)

Any behavior can be identified in a variety of ways. For example, one person might describe a behavior as "typing a paper," while another might describe the behavior as "pressing keys." Yet another person might describe the behavior as "expressing thoughts."

For each of the following items, you task is to select the identification that best describes the behavior for you. There are no right or wrong answers. For each pair, simply click on the description that *you personally believe* is more appropriate.

1. Making a list
    a. Getting organized
    b. Writing things down

2. Taking a test
    a. Showing one’s knowledge
    b. Answering questions

3. Reading
    a. Gaining knowledge
    b. Following lines of print

4. Paying the rent
    a. Maintaining a place to live
    b. Writing a check

5. Voting
    a. Influencing the election
    b. Marking a ballot

6. Filling out a personality quiz
    a. Revealing what you're like
    b. Answering questions
7. Greeting someone
    a. Showing friendliness
    b. Saying hello

Ethical Decision Frame/Self-Interest (Implicit Measure)

Next, you'll be completing a short word completion task. For each of the word fragments below, please fill in one letter per blank to form the first English word that comes to mind that would fit the fragment:

1. p _ r _
2. _i_d
3. m _ r _ _
4. v _ r t _ _
5. m _ n _
6. _ _ l f
7. o _ _ e r
8. a _ o _ e

Diary Prompt (Round 2)

At the end of each round, you will be asked to spend 2-3 minutes typing a short, informal journal post. You can use this space to reflect on your own decision making, or the simulation more generally. In short, please write whatever comes to mind as you think about the simulation thus far. Please do so now.

Diary Prompt (Round 3)

At the end of each round, you will be asked to spend 2-3 minutes typing a short, informal journal post. You can use this space to reflect on your own decision making, or the simulation more generally. In short, please write whatever comes to mind as you think about the simulation thus far. Please do so now.

Diary Prompt (Round 4)

At the end of each round, you will be asked to spend 2-3 minutes typing a short, informal journal post. You can use this space to reflect on your own decision making, or the simulation more generally. In short, please write whatever comes to mind as you think about the simulation thus far. Please do so now.

Psychological Distance (Explicit Measure)

{Response scale: 1 = strongly disagree; 7 = strongly agree)

Please indicate your level of agreement with each of the following statements.

When I think about the workers on my rig:

1. It feels like they are located near me.
2. It feels like they are physically close to me.
3. It seems like they are located beside me.
4. I am actively working with them at the moment.
5. Most of what they are working on with me, we are doing currently.
6. They and I are working together right now.
7. It feels like I am similar to them.
8. They seem to have the same point of view as me.
9. Their perspectives on things are aligned with mine.

Ethical Decision Frame (Explicit Measure)

During each round of the simulation, you made several decisions. Please indicate which label best describes each of the following decisions:

- A personal decision
- A business decision
- An ethical decision
- An environmental decision
- A legal decision

1. Whether to operate, shut-in, or overhaul the blowout preventer.
2. How much crude oil to produce.

3. How much to spend on maintenance.
4. How much to spend on safety programs.
5. Hiring rig workers.
6. Firing rig workers.
7. Training rig workers.
8. Selecting pollution control equipment.

Diary Prompt (Round 5)

At the end of each round, you will be asked to spend 2-3 minutes typing a short, informal journal post. You can use this space to reflect on your own decision making, or the simulation more generally. In short, please write whatever comes to mind as you think about the simulation thus far. Please do so now.

Diary Prompt (Round 6)

At the end of each round, you will be asked to spend 2-3 minutes typing a short, informal journal post. You can use this space to reflect on your own decision making, or the simulation more generally. In short, please write whatever comes to mind as you think about the simulation thus far. Please do so now.

Construal/Psychological Distance Manipulation Check

For the next 2 minutes or so, we'd like to hear your reaction to the "decision making room," in which you just completed the simulation. Please write whatever comes to mind.

Ethical Decision Frame (Explicit, Continuous Measure)

{Response scale: 1 = strongly disagree; 7 = strongly agree)

Please indicate your level of agreement with each of the following statements.

This decision involves ethical issues.

1. Whether to operate, shut-in, or overhaul the blowout preventer.
2. How much crude oil to produce.
3. How much to spend on maintenance.
4. How much to spend on safety programs.
5. Hiring rig workers.
6. Firing rig workers.
7. Training rig workers.
8. Selecting pollution control equipment.

Other-Orientation/Self-Interest

{Response scale: 1 = strongly disagree; 7 = strongly agree}

Please indicate your level of agreement with each of the following statements.

1. During the simulation, I thought about how others might be harmed by my decisions.
2. I was concerned with how my decisions might impact others' well-being.
3. During the simulation, I thought about how my decisions might harm me personally.
4. It felt as though I might be harmed as a result of my decisions during the simulation.

Demographics

Almost done! Please respond to the following questions.

What is your gender?
1. Male
2. Female
(open-ended)

What is your age (in years)?

What is your affiliation with [UNIVERSITY]
1. Undergraduate student
2. Graduate student
3. Faculty
4. Staff
5. Former student
6. Not affiliated
7. Other _____

What is your ethnicity?

Debrief

Again, please accept our sincere thanks for participating in today's study. Please notify the experimenter that you have completed the survey, so that you can receive important debriefing information.

APPENDIX C. MATERIALS FOR STUDY 3

Workstation Signage (High-Level Construal, Other-Orientation)

Model Building Study
Health & Safety Guidelines

The weather may be getting warmer, but the flu is still going around campus. Because you'll be working with your hands during this study, we ask that everyone do the following:

1. When you are ready to build your model (i.e., after you complete the initial survey), please use the hand sanitizer on your desk to clean your hands.
2. Once you have finished building your model and placed all pieces back in the bag, please use one of the cleaning wipes on your desk to clean your work tray.

We don't want YOU TO PASS the flu on to other participants, or to the research assistants running the study. Remember, the flu has a long incubation period, so even if you haven't had any symptoms **you could still make others sick**.

Symptoms of the flu include:

- Aches in muscles and joints;
- Pain or tiredness around eyes;
- Weakness or extreme fatigue;
- Warm, flushed skin;
- Headache;
- Fever; and/or
- Sore throat and runny nose.

Workstation Signage (High-Level Construal, Self-Interest)

Model Building Study
Health & Safety Guidelines

The weather may be getting warmer, but the flu is still going around campus. Because you'll be working with your hands during this study, we ask that everyone do the following:

1. When you are ready to build your model (i.e., after you complete the initial survey), please use the hand sanitizer on your desk to clean your hands.
2. Once you have finished building your model and placed all pieces back in the bag, please use one of the cleaning wipes on your desk to clean your work tray.

We don't want YOU TO CATCH the flu from other participants, or the research assistants running the study. Remember, the flu has a long incubation period, so even if they aren't showing any symptoms **others could still make you sick.**

Symptoms of the flu include:

- Aches in muscles and joints;
- Pain or tiredness around eyes;
- Weakness or extreme fatigue;
- Warm, flushed skin;
- Headache;
- Fever; and/or
- Sore throat and runny nose.

Workstation Signage (Low-Level Construal, Other-Orientation)

Model Building Study
Health & Safety Guidelines

The weather may be getting warmer, but the flu is still going around campus. Because you'll be working with your hands during this study, we ask that everyone do the following:

1. When you are ready to build your model (i.e., after you complete the initial survey), please use the hand sanitizer on your desk to clean your hands.
2. Once you have finished building your model and placed all pieces back in the bag, please use one of the cleaning wipes on your desk to clean your work tray.

We don't want YOU TO PASS the flu on to other participants, or to the research assistants running the study. Remember, the flu has a long incubation period, so even if you haven't had any symptoms **you could still make others sick**.

Workstation Signage (Low-Level Construal, Self-Interest)

Model Building Study
Health & Safety Guidelines

The weather may be getting warmer, but the flu is still going around campus. Because you'll be working with your hands during this study, we ask that everyone do the following:

1. When you are ready to build your model (i.e., after you complete the initial survey), please use the hand sanitizer on your desk to clean your hands.
2. Once you have finished building your model and placed all pieces back in the bag, please use one of the cleaning wipes on your desk to clean your work tray.

We don't want YOU TO CATCH the flu from other participants, or the research assistants running the study. Remember, the flu has a long incubation period, so even if they aren't showing any symptoms **others could still make you sick.**

Survey Introduction

Thank you for participating in this study today. The study involves three components, and will take approximately 15 minutes to complete:

1. You will complete a short initial survey.
2. You will spend five (5) minutes working on a model building task.
3. You will complete a short follow-up survey.

IMPORTANT: Because you will be working with your hands in this study, and because flu season is still ongoing, it is important that you **carefully read** the study "Health & Safety Guidelines" attached to your computer before proceeding.

[Self-interest conditions] ***We don't want others to make you sick!***
[Other-orientation conditions] ***We don't want you to make others sick!***

Experimenter's Instructions (SPOKEN)

You are now going to work on the second study in today's session, in which you'll be building a model. After you review the consent form, you can begin working through the survey. The instructions should be fairly self-explanatory, but please read them carefully. You should also review the lab safety guidelines attached to your computer tower. Whenever you reach the first screen with a stop sign, please read the instructions, then raise your hand and I'll bring you your model. Let me know if you have any questions. Otherwise, you may begin.

Construal Level Manipulation Instructions (High-Level Conditions)

For every thing we do, there always is a reason why we do it. Moreover, we often can trace the causes of our behavior back to broad life-goals that we have. For example, you currently are reading the instructions for a survey. Why are you doing this? Perhaps to complete this study. Why complete this study? Perhaps to fulfill your course research requirement. Why fulfill the research requirement? Perhaps you want to earn a good grade. Why earn a good grade? Maybe because you want to complete a requirement for your degree, or earn academic accolades. And perhaps you wish to complete your degree, or earn academic accolades, because you feel that doing so can bring you success in life.

Research suggests that engaging in thought exercises like that above, in which one thinks about how one's actions relate to one's ultimate goals, can improve people's life satisfaction. In this study, we are testing such a technique. This thought exercise is intended to focus your attention on *why* you do the things you do. For this thought exercise, please consider the following activity: '**health improvement.**'

Construal Level Manipulation Instructions (Low-Level Conditions)

For every thing we do, there always is a process of *how* we do it. Moreover, we often can follow our broad life-goals down to our very specific behaviors. For example, like most people, you probably hope to have success in life. How can you do this? Perhaps completing your degree, or earning academic accolades, can help. How can you do these things? Perhaps by earning a good grade in BUSI 405. How can you earn a good grade? By fulfilling the research requirement. How can you fulfill the research requirement? In some cases, such as today, you follow the survey instructions to complete a study.

Research suggests that engaging in thought exercises like that above, in which one thinks about how one's ultimate life goals can be expressed through specific actions, can improve people's life satisfaction. In this study, we are testing such a technique. This thought exercise is intended to focus your attention on *how* you do the things you do. For this thought exercise, please consider the following activity: **'health improvement.'**

Construal Level Manipulation "Worksheet" (High-Level Conditions)

Next, please fill in the boxes below (starting from the bottom) to include increasingly general reasons ***why*** you might pursue this activity.

1. Why? _____
2. Why? _____
3. Why? _____
4. Why? _____
5. Improve and Maintain Health

Construal Level Manipulation "Worksheet" (Low-Level Conditions)

Next, please fill in the boxes below (starting from the top) to include, increasingly specifically, ***how*** you might pursue this activity.

1. Improve and Maintain Health
2. How? _____
3. How? _____
4. How? _____
5. How? _____

Ethical Decision Frame (Implicit Measure)

Next, you'll be completing a short word completion task. For each of the word fragments below, please fill in one letter per blank to form the first English word that comes to mind that would fit the fragment:

1. p _ r _
2. _ i _ d
3. m _ r _ _
4. v _ r t _ _
5. m _ n _
6. _ _ l f
7. o _ _ e r
8. a _ o _ e

On-screen Instructions

You are now ready to begin the model building task! Please raise your hand, and the experimenter will bring you a tray with your model pieces and instructions.

You will be building a small racecar. You should follow the instructions that begin on page 1. You will have **5 minutes** to work on this task. You are unlikely to finish in this amount of time, but please work as quickly as you can.

When you have received your materials from the experimenter, please click the arrow below and your time will begin.

PARTICIPANT COMPLETES MODEL ASSEMBLY TASK

On-screen Instructions

Please **STOP** working on your model. **Before you call the experimenter**, please do the following:

1. Place your model in the Ziploc bag. **Do not disassemble what you have built**.
2. Place any spare pieces in the Ziploc bag.
3. Place the instruction booklet in the Ziploc bag.
4. Follow any other instructions you may have received from the experimenter.

Once you have followed these instructions, raise your hand and the experimenter will come collect your model. After the experimenter collects your model, you may continue with the survey by clicking the arrow below.

Behavioral Identification Form (Construal Level Manipulation Check)

Any behavior can be identified in a variety of ways. For example, one person might describe a behavior as "typing a paper," while another might describe the behavior as "pressing keys." Yet another person might describe the behavior as "expressing thoughts."

For each of the following items, you task is to select the identification that best describes the behavior for you. There are no right or wrong answers. For each pair, simply click on the description that *you personally believe* is more appropriate.

1. Making a list
    a. Getting organized
    b. Writing things down

2. Taking a test
    a. Showing one's knowledge
    b. Answering questions

3. Reading
    a. Gaining knowledge
    b. Following lines of print

4. Paying the rent
    a. Maintaining a place to live
    b. Writing a check

5. Voting
    a. Influencing the election
    b. Marking a ballot

6. Filling out a personality quiz
    a. Revealing what you're like
    b. Answering questions

7. Greeting someone
    a. Showing friendliness
    b. Saying hello

Other-orientation vs. self-interest (implicit sentence completion measure)

Some things people say are redundant, in that one or more words in a sentence can be guessed from the remainder of the sentence. We'd like for you to read each of the following sentences, each of which contains a blank, and choose the most appropriate word from among the alternatives listed for each blank.

The alternatives are all technically correct, but some alternatives may be more likely than others. Please work quickly, and select the first answer that comes to mind.

1. After spreading fertilizer liberally over the flower bed, _____ watered the flowers.
    a. I
    b. she
    c. we

2. Although _____ personal library consists of only a few books, some of them are classics.
    a. their
    b. our
    c. my

3. Please don't do this to _____, it is just not fair.
    a. me
    b. her
    c. us

4. At first it didn't seem to make any difference, but by later that night the noise from the party was entirely too loud to allow _____ to sleep.
    a. us
    b. her
    c. me

5. It isn't easy to get lost in this town, but somehow _____ managed it.
    a. I
    b. we
    c. they

<u>Other-orientation vs. self-interest (explicit measure/manipulation check)</u>

{Response scale: 1 = strongly disagree; 7 = strongly agree}

Please indicate your level of agreement with each of the following statements.

1. During today's study, I thought about how my actions might harm others.
2. During today's study, I thought about how I myself might be harmed.
3. During today's study, I was worried about others becoming sick.
4. During today's study, I was worried about becoming sick myself.
5. I am feeling sick right now [*control*]
6. I am currently experiencing flu-like symptoms [*control*]

Ethical Decision Frame (Explicit, Categorical Measure)

During today's study, you were asked to abide by lab health and safety guidelines. For each of these guidelines, you had to make a decision (i.e., whether or not to do what the instructions asked). Now, for each of those decisions, please respond to the following question:

If you had to choose one description for this decision, how would you describe it?

Using the hand sanitizer before building a model.
1. A personal decision
2. A business decision
3. An ethical decision
4. An environmental decision
5. A legal decision

Using a cleaning wipe to clean your work tray after building your model.
1. A personal decision
2. A business decision
3. An ethical decision
4. An environmental decision
5. A legal decision

Ethical Decision Frame (Explicit, Continuous Measure)

{Response scale: 1 = strongly disagree; 7 = strongly agree}

For each of the following decisions, please indicate your agreement with the following statement:

This decision involves ethical issues

1. Using the hand sanitizer before building your model.
2. Using the cleaning wipe to clean your work tray after building the model.

Self-Reported Rule Compliance

{Response scale: 0 = no; 1 = yes}

1. Did you use the hand sanitizer before building your model?
2. Did you use a cleaning wipe to clean your work tray after building your model?

Demographics

Almost done! Please respond to the following questions.

What is your gender?
1. Male
2. Female
(open-ended)

What is your age (in years)?

What is your academic year?
1. First year student
2. Sophomore
3. Junior
4. Senior
5. Graduate Student
6. Other _____

What is your major?

Are you an international student?

If YES: From where?

What is your ethnicity?

Debrief

Again, please accept our sincere thanks for participating in today's study. Please notify the experimenter that you have completed the survey, so that you can receive important debriefing information.

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