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# A Scale of Heroic Cognition for Workplace Contexts

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A Scale of Heroic Cognition for Workplace Contexts

A Thesis

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Master of Psychology

By

Patrick Joseph Furey

June 10, 2014

Department of Psychology

College of Science and Health

DePaul University

Chicago, Illinois

**Thesis Committee**

Annette Towler, Ph.D., Chairperson

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### **Acknowledgments**

I would like to thank Annette and Doug for their patience, their genuine interest in the heroism literature, and the vision they have shared with me for the impact the study of heroism can have upon organizations and broader social psychology. Their flexibility, encouragement, and support have made this research possible, and helped to see its execution fulfilled. If my future research efforts on heroic behaviors should prove fruitful, their brilliance, their openness to the strange and the new, and their unfailing kindness will be largely responsible for it. I am indebted to you both!

## **Biography**

The author was born in Pittsburgh, Pennsylvania, April 4, 1989. He graduated from Keystone Oaks High School, and received his Bachelor of Science degree in Psychology and Biology from Allegheny College in Meadville, PA in 2010.

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## **Abstract**

Interest in research on heroism has begun to increase during the past decade, but, despite the ancient roots of heroism embedded deeply in cultures around the world, empirical work on the subject is relatively sparse. Direct and explicit empirical study of heroism in organizational contexts, specifically, is especially rare. The lack of organizational heroism research is surprising. There is a preponderance of evidence that organizational wrongdoing is observed across many organizations, sometimes to great extremes that are in violation of federal law, and it can have profound social impact. Organizational members who become aware of extreme wrongdoing committed by others are likely to experience negative cognitive and emotional states. Such states may require innocent organizational members who are aware of wrongdoing committed by others to engage in courageous, risky, and self-sacrificial behaviors in an effort to expose and end misconduct, often without any external benefit for taking action. These courageous actors are often heroic. Although a better understanding of heroic decision-making in organizations has the potential to curtail organizational and larger societal harm, no measurement instrument exists to assess the heroic cognitions of organizational members that may predict the likelihood that they will engage in heroic behaviors. In response to this gap in the literature, the present research sought to develop and explore the dimensionality of a measure of heroic cognition for workplace contexts. Using principal axis factoring for exploratory factor analysis with oblique factor rotation, four factors were extracted, accounting for 27.46% of the variance. After dropping the fourth factor

of no theoretical import, and the third factor due to low internal reliability, two factors remained: heroic self-efficacy and acceptance of self-sacrifice. Formal content validation with a jury of social psychological SMEs, however, failed across all items in the retained factors. Potential item content confounds, lengthy and complex item wording, and the direct assessment of single-method self-reported heroic cognitions limited both the interpretability of the results and the utility of the scale for future research. Future research should further develop measures of the retained heroic self-efficacy and acceptance of self-sacrifice scales to circumvent the issues cited by the content validation panel. Initial construct validation studies using the revised scales should borrow methodologies from the change-oriented organizational citizenship behaviors literature, using a multi-trait multi-method approach that seeks to develop a nomological network for workplace heroic cognition. The present research provides the foundation for more targeted follow-up research efforts on heroic decision-making in organizations.

## Introduction

Organizational wrongdoing is both prolific and impactful. Nearly every organization has reported workplace deviance (Henle, Giacalone, & Jurkiewicz, 2005), and as many as three of every four employees have engaged in some form of deviant workplace behavior, from unscheduled absenteeism, to computer fraud, theft, sabotage, or vandalism (Robinson & Bennett, 1995). The cost organizations pay for deviance is considerable. On average, the mean financial expense of deviant and fraudulent acts is approximately 5% of organizations' annual revenue (ACFE, 2010). Given the United States of America's GDP for 2012 (National Income and Product Accounts, 2013), this amounts to an annual failure-of-vigilance "tax" of approximately \$784 billion across domestic organizations. Although most deviant behaviors may be mild in scope (e.g., unscheduled absence for a single day of work), the cumulative effect is worthy of attention.

Occasionally, individual and group acts of deviance themselves command attention. Cases of mass-scale organizational fraud, corruption, and criminality appear frequently in the media and are pervasive across every type of organization. In the business arena, Bernie Madoff's Ponzi scheme alone cost unwitting investors billions of dollars and endured for more than a decade (Henriques, 2009). In the public sector, the international image of the United States was tarnished when detainees in the Abu Ghraib military prison were subjected to demeaning and inhumane treatment by members of the US military (Blau, Franco, & Zimbardo, 2009). Even in nonprofit institutions of learning, we see cases of people like Diederik Stapel, from our own field of psychology, who

committed research fraud in as many as 55 papers to help him achieve publications (Enserink, 2010; Neuroskeptic, 2012; Cooper, 2013).

With such startling prevalence across every genre of work, there is a need to combat destructive organizational wrongdoing. Often, however, the punitive systems that reprimand wrongdoing and wrongdoers are unaware of a problem until courageous organizational members rise to the occasion to expose it. The literature has long-recognized such heroic individuals (Nader, Petkas, & Blackwell, 1972; Miceli & Near, 1985; Miceli, Near, Rehg, & Van Scotter, 2012), but has only recently begun to better understand the antecedents of the choice to act against perceived wrongdoing (Miceli, Near, & Dworkin, 2008). Explicit research on heroic action in organizations is exceedingly sparse. Especially given the vision of tomorrow's business leaders for an evolved socioeconomic model (The Deloitte Millennial Survey, 2014), and the call to create and foster more ethical values, pro-social conduct, and effective organizational outcomes (Lefkowitz, 2005), further work is needed on the application of moral and selfless decision-making paradigms (e.g., Walker, Frimer, & Dunlop, 2012) to the workplace.

The proposed research is an effort to refine the manner in which psychologists study heroic behavior in the workplace. To-date, heroism has been conceived of as a behavioral outcome of individual traits (e.g., Hughes-Hallet, 2004) and contextual influence (e.g., Miceli & Near, 1985), but there have been few empirical attempts to explicitly define the heroic decision-making process. It has been suggested that heroic imagination, heroic cognition that includes

“awareness of opportunities to voluntarily act in self-sacrificing ways for the greater good,” may be the distinct psychological construct of interest (Heroic Imagination Project, Blau, Franco, & Zimbardo, 2009); however, no attempt has been made to develop or test a direct empirical measure of heroic cognitions. Optimizing the operationalization and predictability of heroic cognition may improve our capacity to combat organizational fraud and deviance. The proposed research, therefore, will attempt to develop and validate a scale of heroic cognition for use in workplace contexts.

### **Heroism Literature Review**

The concept of heroic behavior is a complex and contentious topic in the literature (Blau, Franco, & Zimbardo, 2011). Its operationalization and categorization is often grounded more in folklore than in science, initially derived primarily from literary legend and historical figures. The traditional view of heroism relies on the identification of exemplars that demonstrate face-valid heroic behaviors, actions, and qualities. Via written and oral tradition, examples of heroes (e.g., Martin Luther King, Jr., Ghandi, FDR, medal of honor recipients,... etc.) become comparison cases by which individuals decide whether their own actions or those of others witnessed in the media, for instance, are heroic (Medin, 1989, p.1472-1473). This view postulates that there exists a “Heroic Elect” that, by virtue of exceptional gifts/abilities, are empowered to act heroically (Hughes-Hallet, 2004).

The traditional exemplar categorization of heroes, while conceptually useful, requires synthesis and integration in order to render it suitable for

empirical exploration. Recent conceptual arguments in the literature have suggested that heroic behavior has certain universal characteristics that apply across heroic contexts (e.g., Becker & Eagley, 2004; Franco, Blau, & Zimbardo, 2011; Rankin & Eagley, 2008). Heroic actions in diverse situations all share the following characteristics (Franco, Blau, & Zimbardo, 2011).

- (1) The act must be voluntary.
- (2) The act must involve potential physical risk or profound social sacrifice.
- (3) The actor must be willing to accept the consequence(s) of her or his action.
- (4) The act must be in the service of others and performed without expectation of extrinsic gain.

These general characteristics of heroism can be observed in all heroic subtypes within the recently-proposed heroism taxonomy (Franco, Blau, & Zimbardo, 2011, p.102). Heroic behavior can be broadly classified in one of two general categories based upon the genre of potential jeopardy in which individuals may find themselves by choosing to act. An individual who acts heroically may either face physical peril, social sacrifice, or both. Although the subtypes of heroic action are numerous (twelve in total), all may be found in organizational contexts.

Heroic subclasses are not mutually exclusive within the specified taxonomy (Franco, Blau, & Zimbardo, 2011, p.102), but still provide some conceptual utility. Physical peril heroes may be military/duty-bound individuals that go above and beyond the call of duty, or civil heroes that choose to act despite the lack of formal duty-binding rules. Social sacrifice heroes may be labeled in one or more of ten subclasses, including bureaucracy heroes and

whistleblowers, religious, politico-religious, and political leaders, Good Samaritans, underdogs, martyrs, adventurers/discoverers, and scientific heroes. It is notable that social sacrifice heroes of any category may also be exposed to physical peril (e.g.- assassination attempts, murder threats,...etc) for the work they do in the social sphere. Nevertheless, because the five principles of heroic behavior apply across all subtypes, the taxonomy functions primarily to provide the specific contexts within which a heroic actor will encounter distinct barriers to action.

Given the operationalization of heroic behavior and specification of heroic subtypes, it follows that heroic cognition must encompass an awareness of what is required to act heroically. Although heroic cognition requires a state of mental readiness to act pro-socially and self-sacrificially, there has been no attempt to create a measure to assess individual readiness for heroic action. The very limited body of literature suggests that it may be four-dimensional (Franco, Blau, & Zimbardo, 2011). More specifically, heroic cognition has been conceived of as (1) Specific self-efficacy in one's ability to achieve pro-social goals in a particular situational context, (2) Conscious awareness of the situations that should compel one to take action for an ethical cause and the situations that should not (recognition of boundary conditions), (3) Acknowledgment of barriers to success should action be chosen, (4) The courageous acceptance of personal sacrifices that may result if action is taken.

### **Heroic Cognition: Related Constructs and Antecedents**

Heroic cognition is likely to be a higher-order factor, related to other similar constructs and predicted by individual difference antecedents (Franco, Blau, & Zimbardo, 2011). Inherent to the construct is empathic awareness of others' plight, a sense of voluntary duty to meet others' needs in a pro-social way, readiness to promptly respond to needs, courageous acceptance of the potential for self-sacrifice required by the choice to act, and the confidence that action may produce desired change. The literature already contains some operationalizations that are highly-relevant to the above factors: proactivity, altruism and concern for others, and specific self-efficacy.

**Proactivity.** The heroism literature has arrived at a critical moment in the history of world economies. The economic landscape is becoming more challenging, and organizational members must often bear the brunt of it. There is evidence to suggest that the modern economy demands more of employees than ever before (Parker & Ohly, 2008). Agents of change in the world of work include globalization, increasing pace of business, increasing competition in the marketplace, increasing education of employees, market instability, and rapidly-fluctuating organizational resources (Boswell, Colvin, & Darnold, 2008). A "New Deal" psychological contract has arisen, in which employees have often become temporary "partners" of organizations, rather than long-term "members of the family" as in the paternalistic organizations of the past (Parker & Ohly, 2008).

Under this new psychological contract, organizations must demand a new standard of workers. Employees now have less-defined job roles and titles, and



often do the duties that once were assigned to two, three, or more people. Work is more socially demanding, more emotionally laborious, and more cognitively taxing, requiring employees to be better self-regulators of their cognitions, affect, and behaviors (Frese & Fay, 2001; Boswell et al, 2008; Parker & Ohly, 2008). Employees of today must use self-regulation tactics to rise to the novel demands posed by the New Deal psychological contract of the modern working world, a chief demand of which is engaging problematic organizational policies.

Prompted by an earlier article that introduced the concept (Bateman & Crant, 1993), a promising vein of research has developed over the past 15 years concerning the need for self-regulation of initiative at work, known as the construct proactivity (Parker, Wall, & Jackson, 1997; Parker & Sprigg, 1999). Recognizing the dissolution of the more traditional system of narrowly-defined job titles and descriptions, Parker and colleagues' research over the past decade has examined whether proactive personality predisposes employees to be more successful in increasingly challenging and dynamic workplaces. Generally, research has affirmed that proactivity is an important trait for successful employees to possess, and has numerous desirable individual and organizational outcomes (Parker & Sprigg, 1999; Parker, Bindl, & Strauss, 2010).

While reasons for choosing to act proactively at work are infinitely varied, the challenges posed by both informal and formal rules and regulations that fail to meet the needs for which they were intended may be among the most important reasons. As many of us find our work roles within the organizations that employ us integral to our self-concept (Super, 1951; Erikson, 1959; Galinsky & Fast,

1966), organizational and business rules and regulations are likely to be quite salient to many of us in determining our behaviors and the behaviors of those around us throughout much of our lives. Coupled with the understanding that the modern economy demands skillful self-regulation, situational work cues may persuade some employees to believe that the burden of deviance (positive or destructive) from a stagnant or malignant norm falls to themselves, as individuals seeking a better outcome than that which the rules provide.

**Altruism and Concern for Others.** There has been some criticism that heroic cognition is not conceptually distinct in theory from altruism (Eagly, & Becker, 2005; Shepela et al., 1999), prompting a thorough response article that clarifies the differences between the constructs (Franco, Blau, & Zimbardo, 2011). Altruistic and heroic behaviors do have some overlap on three dimensions. Both are performed voluntarily, without expectation of extrinsic gain, and in the service of others.

Concern for others (Simon, 1990) is likely an antecedent of both altruistic and heroic behaviors. Organizational members whose value systems include strong other-oriented values are more likely to forgo a preeminent interest in their own personal outcomes, instead directing their behaviors towards helping and coordinating with others (Korsgaard, Meglino, & Lester, 1997). Even when helping others requires that organizational members engage in extra-role behavior, adding to the workload of their required job duties, individuals high in other-oriented values are still more likely to choose to help others than focus on their own personal outcomes (McNeely & Meglino, 1994; Korsgaard, Meglino, &

Lester, 1997). Although both altruistic and heroic behaviors are predicated upon concern for others, heroic behaviors have a far higher risk threshold for action.

To be heroic, one must recognize that self-sacrifice, even the greatest sacrifice of one's life itself, may well be a necessary correlate of taking action. Furthermore, heroic actors often endure ridicule or status as outcasts and targets for their actions, while altruistic actors often benefit socially from their acts even if such benefits were not intentionally planned (Franco, Blau, & Zimbardo, 2011, p.104). Although both may benefit from their actions, heroes may create enemies by their actions that altruistic actors certainly do not (e.g., holding the door for your coworkers will not provoke retaliation, but standing up to an abusive boss on behalf of a coworker might). Those with heroic cognition, therefore, go beyond altruism, in their willingness to accept such sacrifices.

**Self-Efficacy.** Heroic actors in organizational contexts are often faced with ethical dilemmas that require courageous and, sometimes, rapid action. The timescale of action in organizational contexts, however, is not as extreme as it is for heroic actors in action teams or military contexts where the actor must make a split-second decision in a matter of a few seconds (Franco, Blau, & Zimbardo, 2011). Organizational members that are presented with ethical challenges, therefore, have more time to plan their actions and to consider possible outcomes. During the evaluation period of challenging organizational stimuli, organizational members considering action must assess how capable they themselves are of achieving the goal of resolving organizational problems.

Social-Cognitive Theory suggests that organizational members who have specific self-efficacy in the domain of heroic action are more likely to act when they encounter ethical challenges in the organizations for which they work. Self-efficacy is defined as a critical piece of self-regulation of goal directed behavior, the outcome of triadic reciprocal causation (Bandura, 1977; Wood & Bandura, 1989). Reciprocal determinism posits that individuals and their environments are both the *determinants* and *determiners* of each other (cause and the effect in constant flux). We behave as a result of a bidirectional, simultaneous interaction between personal factors (e.g., traits, such as personality, and states, such as mood), and environmental factors (e.g., work environmental influences, such as organizational climate). An organizational member faced with a challenge that requires heroic action, therefore, must have heroic specific self-efficacy, a belief in her/his ability to successfully resolve organizational issues that are in conflict with her/his value system. If individuals considering action have themselves achieved success in the past when engaging ethical dilemmas, they also will be more likely to choose to challenge future ethical dilemmas.

### **Applying Heroic Cognition to Workplace Contexts**

Whether or not heroic cognition proves to be empirically distinct, predicting relevant criteria over and above other correlated predictors, there are numerous veins of research in the literature that suggest heroic cognition may be a relevant factor. Specifically, heroic cognition may predict organizational deviance, organizational members working outside the established structures of

bureaucracy in response to perceived organizational problems or breaches to ethics (Warren, 2003). Deviance may manifest itself as pro-social and constructive or anti-social and destructive.

Recently, it has been suggested that the manifestation of deviance as positive or destructive can be framed as a choice paradigm for proactive individuals (Warren, 2003). In this way, both positive and destructive deviance may be considered as anchors on either end of a spectrum of possible behavioral outcomes in response to unethical or ineffective organizational practices, each of which is subject to similar antecedents and cognitive mechanisms.

Deviance is best understood by considering the role of group normative control. Organizational policies (ethical or unethical), and the members that act according or counter to them, result in the formation of organizational norms. Group norms are de facto social rules that generally characterize and govern group member behavior (Hackman, 1976; Feldman, 1984). Norms arise from policies and statements made by managers and peers, precedents set by historical events, initial behaviors demonstrated at group formation, and other norms brought in by new members who were not originally part of the group.

These informal social rules generally develop quickly and are maintained and propagated because they serve a variety of essential functions for the group, including ensuring group survival, expediting social exchanges by defining desirable behaviors, delimiting behaviors that might be injurious to the group's goals or its members, and classifying central markers that define a group's identity (Feldman, 1984). As normative control of group member behavior is

essential to maintaining group identity and function, it is likely that the efforts of proactive individuals in organizations may generally be better received by the groups in which they operate if they conform to established norms. Because norms play key roles in group identity and survival, it is not surprising that the literature has generally condemned the negative influence of group members who deviate from organizational norms, regardless of positive or destructive intent.

**Destructive deviance.** The literature has formally recognized deviant workplace behaviors, volitional actions that violate the social norms of an organization, for some time (Robinson & Bennett, 1995; Bordia, Restubog, & Tang, 2008). Deviant behavior at work can be identified by three central characteristics: it is done intentionally, it violates formal social expectations, and it is directed either at the organization as a whole (organizational deviance) or at members within it (interpersonal deviance) (Robinson & Bennett, 1995). Deviance is traditionally seen in the literature as revenge behaviors that employees may engage in because they are motivated by a negative affective state, due to psychological contract breach (Bordia, Restubog, & Tang, 2008), and perceptions of injustice (Robinson & Bennett, 1997). Such behaviors have received significant empirical attention primarily because they may cause organizational or interpersonal harm (Bensimon, 1995; Bennett & Robinson, 2000; Burroughs, 2001).

**Positive/constructive deviance.** Few would argue that harmful revenge is a productive response to negative affect and cognitions in the workplace, but there is evidence to suggest that revenge alone does not sufficiently represent the full

spectrum of workplace deviance. Destructive deviance is only one part of the two-sided deviance literature (Warren, 2003). A second vein of deviance literature suggests that deviant organizational behavior, when properly executed, may be responsible for desirable organizational and broader societal outcomes.

Constructive/positive deviance (Spreitzer & Sonenshein, 2004) has been studied under a variety of operationalizations, including, among others, whistleblowing (Near & Miceli, 1995; Gundlach, Douglas, & Martinko, 2003), workplace voice (Klass, Olson-Buchanon, & Ward, 2012), organizational expedience (McLean Parks, Ma, & Gallagher, 2010), felt responsibility for constructive change (Fuller, Marler & Hester, 2006), minority dissent (De Dreu & West, 2001), and pro-social rule breaking (Morrison, 2006). Organizations would far prefer individuals to react to negative cognitive states and perceptions of psychological contract breach with constructive, rather than destructive, intent and behaviors.

Broadly, the argument for how constructive deviance occurs can be described within the framework of the Theory of Planned Behavior. Individuals who perceive themselves to be heroic may be more likely to intend to behave heroically and to actually engage in heroic action (Fishbein & Ajzen, 1975). Phrased differently, heroic attitudes and beliefs about the self, arising from behavioral, normative, and control beliefs towards one's capacity for heroic action in a particular context (Ajzen, 2012), may predict heroic intentions and, ultimately, heroic behaviors. The decision-making pathway for heroic action, therefore, likely begins with heroic behavior intentionality. Contextual factors

within an organizational situation will moderate the expression of heroic behavior, but foundational heroic intentions may still be of use and import (Franco, Blau, & Zimbardo, 2011). However, neither a formal established pathway for heroic-decision making, nor the process for the development of heroic cognitions about the self exists in the literature. Furthermore, establishing such pathways is beyond the scope of this research. The present research seeks only provide organizations and researchers with a measure that can be used to assess individuals' self-efficacy to act heroically, acceptance of self-sacrificial consequences, awareness of contexts that require heroic action, and acknowledgment of barriers they may encounter. Coupled with extant models of organizational citizenship behaviors, a scale of heroic cognition could provide applied utility to help reduce destructive deviance and increase courageous self-sacrificial behaviors that enhance organizational and social value, and provide a basis for more research on heroic decision-making.

### **Rationale**

Organizational policies and members can sometimes be unjust, unethical, immoral, and harmful. For those members who encounter such problematic systems and behaviors, the choice must be made to either engage in remedial action or not, and, if so, to meet perceived problems with heroic self-sacrifice or destructive deviance. Understanding and fostering heroic cognition in organizational members may be one method of encouraging pro-social OCB's, but empirical measurement of the construct is required before its criterion-related validity can be established in organizational contexts.



The proposed research answers the call (Franco, Blau, & Zimbardo, 2011) to better understand the construct of heroic cognition. Organizational members who are prepared to act heroically when situational demands require courage behaviors may be more likely to act pro-socially than destructively. To-date, no such measure of heroic cognition exists in the published literature. The primary goal of the proposed research, therefore, is the creation and initial validation of a scale of heroic cognition.

### **Research Question**

Research Question I. What is the underlying dimensionality of heroic cognition in workplace contexts?

## Method

### Research Participants

Participants were introductory psychology course students from a large university in the Midwest region of the United States of America ( $n_{\text{observed}} = 251$ ). The target sample size to attain a minimum number of participants for factor analysis of the 40-item heroic cognition scale was 200 participants (target minimum  $n/k$  ratio = 5:1;  $N_{\text{minimum}} = 200$  participants; Shultz & Whitney, 2005, p.314).

The participants were predominately female (68%) with a lesser representation of males (32%). The mean age of participants was 20.18 years (SD = 3.54 years), and ages ranged from 18 to 47 years. The racial composition of the sample was mostly white (54%) or Latino/Hispanic (21%). Participants specifying that they were of black, South Asian, East Asian, Middle Eastern, or Native American descent composed less than 10% of the sample each. Most participants were of Catholic (42%) or other Christian (27%) religions, with a notable minority of Agnostics (12%). Participants specifying that they were of Jewish, Buddhist, Hindu, Muslim, or Atheist religions composed less than 10% of the sample each.

### Development of the Heroic Cognition Scale

In accordance with widely-accepted recommendations for scale creation (Hinkin, 1998), development of the heroic cognition scale proceeded through several steps. These steps included item generation for the heroic cognition scale,

questionnaire administration to an initial set of participants, exploratory factor analysis, and content validation with a jury of subject matter experts.

Items for the heroic cognition scale were generated by a deductive method based on prior content validation efforts in the literature (Franco, Blau, & Zimbardo, 2011). Heroic cognition has been conceived of as (1) Specific self-efficacy in one's ability to achieve pro-social goals in a particular situational context, (2) Conscious awareness of the situations that should compel one to take action for an ethical cause and the situations that should not (recognition of boundary conditions), (3) Acknowledgment of barriers to success should action be chosen, and (4) The courageous acceptance of personal sacrifices that may result if action is taken (Fraco, Blau, & Zimbardo, 2011).

Because the heroic cognition scale was intended for use in applied organizational settings, functional brevity was desired if scale reliability was not greatly negatively impacted (Shultz & Whitney, 2005, p.55-56). Given the specified dimensions of heroic cognition theorized, ten items were created for each, for a total of forty initial items before factor analysis and content validation item reduction (Appendix A). This method was estimated to result in a final scale containing one-third to one-quarter the number of initial items (DeVellis, 1991). Scale were written using a closed-ended, Likert-type response scale format (1 = *Strongly Disagree* to 5 = *Strongly Agree*), as this approach has been used to successful effect in related altruism research (Rushton, Chrisjohn, & Fekken, 1981). Qualtrics software was used to upload the heroic cognition scale items and a set of demographic questions to the internet, where introductory psychology

course students from a large university in the Midwest region of the United States of America were permitted to answer the questions in their own time from any remote location.

Although there was some theoretical basis to expect a four-factor structure of the heroic cognition construct, there was no prior empirical evidence to confirm it. Principal axis factoring was, therefore, used to explore the underlying theoretical factor structure of the heroic cognition construct (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

A panel of academic psychologists was assembled to critically examine the content validity of the heroic cognitions scale obtained from exploratory factor analysis. The panel contained six social psychology graduate school students pursuing either a master's or doctoral degree, and two experienced social psychology faculty members with doctoral degrees ( $n_{\text{panel}} = 8$ ). Social psychology experts were chosen because the heroic cognition theory literature is rooted in the social psychological tradition.

A content validity ratio (CVR) methodology was used to formally assess the content validity of the scale (Lawshe, 1975). CVRs provide quantified evidence of whether or not scale items are considered by subject matter experts to be essential measures of a proposed construct. Panel members were given a list of all items retained after principal axis factoring and item reduction, and asked to rate the criticality of the items in measuring, specifically and respectively, the heroic self-efficacy, acceptance of self-sacrifice, and awareness of contextual

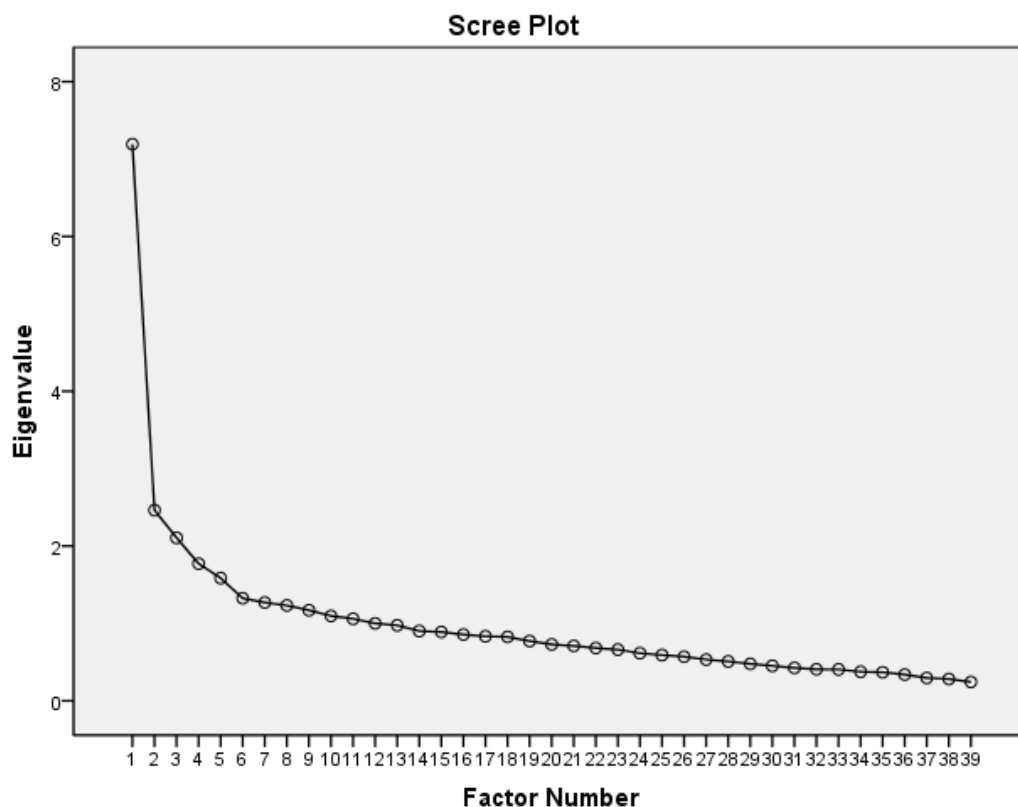
constraints dimensions on a three-point scale (1 = not necessary, 2 = useful, 3 = essential).

The content validity ratio for each item was calculated according to Lawshe's (1975) formula for CVRs from the validation panel ratings obtained. This formula is, in essence a ratio of the total number of SMEs providing ratings subtracted from the number of SMEs rating an item as essential, divided by the total number of raters (i.e.,  $[(n_{essential} - (N_{total}/2)) / (N_{total}/2)]$ ). Each CVR calculated was compared to the critical values table in the literature for minimum needed ratios corresponding with the size of the validation panel (Lawshe, 1975). Items that fail to meet critical CVR values are, by the CVR method alone, considered to be poor measures of a construct. Panel members were also asked to provide qualitative feedback for the usefulness and face validity each item. Content validation results were compared with factor analysis results, such that CVR values, panel member commentary, and EFA extraction results were all considered simultaneously in establishing the preliminary validity of the heroic cognition scale.

## Results

### Exploratory Factor Analysis and Scale Internal Reliability

The factor structure of the 40-item Self-Report Heroic Cognitions scale (Appendix A) was assessed using principal axis factoring for exploratory factor analysis (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Promax rotation was used because factor intercorrelations within each factor solution explored were greater than 0.20 (Hendrickson & White, 1964) (Table 1). Examination of the scree plot and eigenvalues suggested several possible factor solutions (Figure 1). Several iterations of principal axis factoring were, therefore, performed, specifying two, three, four, or five factors. Within each iteration, items in the structure matrices produced by the various factor solutions were not retained in the factor structure if they had loadings less than 0.40 or cross-loadings greater than 0.40. Factor structure beyond a four-factor solution was difficult to interpret. Solutions of two and three factors resulted in factors containing items that spanned multiple theoretical boundaries. A four-factor solution was selected because it minimized these issues.



*Figure 1.* Scree plot of principal axis factoring extraction with promax rotation. A four factor solution was chosen based upon a combination of the scree plot, eigenvalues observed, proportion of variance accounted for, interpretability of factor loadings, and alignment with heroic cognition theory.

Table 1

*Heroic Cognition: Retained Factor Means, Standard Deviations, Reliabilities, and Intercorrelations*

Factor	M	SD	Eigenvalue			
			(% variance acct. for)	1	2	3
1. Heroic Self-Efficacy	3.55	0.55	6.52 (16.75%)	(0.76)		
2. Acceptance of Self-Sacrifice	3.25	0.28	1.70 (4.35%)	0.55	(0.61)	
3. Awareness of Contexts	3.54	0.06	1.39 (3.57%)	0.34	0.45	(0.38)

*Note.* Factor reliabilities are in the diagonal of the correlation portion of the table. Factor scores were the mean of retained items within each dimension.

In the four factor solution, evidence of common factors and favorable partial correlations among the items was observed ( $KMO = .82$ ). Bartlett's test of sphericity led to a rejection of the null hypothesis that the item correlation matrix

was an identity matrix,  $\chi^2 (741, N = 251) = 2491.20, p < .001$ . Twenty-one items were retained after item reduction criteria were applied. However, item loadings within the four-factor structure produced unexpected results.

Only 27.5% of items loaded onto the factors anticipated by deductive item generation from existing theory on heroic cognitions. All reverse-coded items loaded onto one factor, regardless of the intended theoretical content of the items. Reasons for this can only be speculated. An exploratory descriptive statistics analysis of the mean scores of reverse-coded items suggested that item means for reverse-coded items did not differ on average by more than approximately 0.10-0.30 scale points (scale of 1-to-5 points) from other similar items, and a participant-by-participant analysis suggested that most participants detected the negative wording of these items. However, the mean differences were likely enough to cause the pattern of reverse-coded items to be extracted as an independent factor. After removing the fourth factor containing only reverse-coded items, 14 items remained. Of the remaining 14 items, 8 items loaded onto the first factor, 3 items loaded onto the second, and 3 items loaded onto the third.

The first factor, containing 8 items, was labeled *heroic self-efficacy* because it reflected self-reported belief in one's ability to engage in heroic action (eigenvalue = 6.52; 16.75% of the variance). Items included, "I am completely confident that I have the ability to make a radical positive change in this world for the benefit of others" ( $\alpha = .76$ ). The second factor, composed of 3 items, was labeled *acceptance of self-sacrifice* because it reflected a willingness to be self-sacrificial for others' well-being (eigenvalue = 1.70; 4.35% of the variance). Items



included, “I would rather sacrifice my most treasured dream for my own life than fail to act on behalf of others in need” ( $\alpha = .61$ ). The third factor, containing 3 items, was labeled *awareness of contextual constraints* because it reflected acknowledgment of external forces that would impact one’s efforts to affect outcomes of their heroic action (eigenvalue = 1.39; 3.57% of the variance). Items included, “I would not be able to govern all of the outcomes of my attempts to confront wrongdoing at my workplace” ( $\alpha = .38$ ). Given the low number of items on factors two and three, and that the content of the items within the respective subscales asked about varied contexts that may be likely to produce variability in responses (Appendix A), it was perhaps unsurprising that subscale reliabilities were as low as observed. Because internal consistency of the third factor was poor, the third factor was eliminated from further analyses. The final solution included two factors and 11 items (Table 2).

Table 2  
*Items of the Heroic Cognition Scale Retained After PAF and Reliability Analysis*

Subscale	Item
<i>Heroic self-efficacy</i>	I think of myself as a courageous person of action.
	When I hear stories in the news of people doing heroic things, I firmly believe that I could do them too if I were ever in the same situation.
	I know how to successfully confront people who are more powerful than I am when their abuse of authority is harmful to others.
	I am completely confident that I have the ability to make a radical positive change in this world for the benefit of others.
	If I saw my boss doing something illegal, I would have the courage to report my boss to the proper authorities.
	Even as an employee with a low-level position, I could make my voice heard if I witnessed wrongdoing around me on the job.
	I know that I must occasionally do something bold on behalf of others to make a positive difference at my workplace.
	Nothing can get between me and my goals of achieving a more ethical workplace.
<i>Acceptance of self-sacrifice</i>	I would rather risk my own life for others' benefit than to live a safe life for only myself.
	I would rather sacrifice my most treasured dream for my own life than fail to act on behalf of others in dire need.
	My actions at work demonstrate that I am concerned for others more than I am for myself.

## **Content Validity**

A panel of SMEs rated the criticality of items for the heroic self-efficacy, acceptance of self-sacrifice, and awareness of contextual constraints factors. Because the panel contained eight SMEs, the critical CVR cutoff value for an item to be considered essential was 0.75 (Lawshe, 1975). All items failed to reach a sufficient CVR to support the content validity of the heroic cognitions scale (range of obtained CVRs: -1.00 to 0.25). Alone, the CVRs obtained indicated that SMEs did not think any of the scale items across the factors were sufficient measures of their stated constructs. The scale also generated considerable contentious discussion among the panel members, and the construct of heroic cognition was debated at length. Because content validation had failed, the panel was asked to provide additional perspectives regarding why items were judged to be poor measures of the heroic cognitions construct. Panel members cited several concerns.

The items were considered to have been too comprehensive and lengthy, effectively providing participants who responded to the survey with definitions of the entire heroism construct. Panel members indicated that item wording, therefore, made items difficult to answer and responses difficult to interpret. The item content of several items was also directly questioned. Panel members indicated that some items may be measuring other constructs in addition to or instead of heroism. Example items in question included, “I think of myself as a courageous person of action” and “Nothing can get between me and my goals of achieving a more ethical workplace,” which were judged by panel members to

measure, at least in part, narcissism. For these example items that were judged to measure narcissism, panel members argued compellingly that making strong statements about the self as a courageous person who cannot fail in their efforts in these contexts may measure heroic cognitions in part, but also measure self-admiration, entitlement, and/or arrogance. Lastly, panel members expressed concern that the study design of attempting to measure self-reported heroic cognitions directly was too overt and likely subject to response bias for social desirability. Ultimately, the validation panel advised either alternative research methodologies for more subtle examination of the heroism construct, or a narrower study of subcomponents of the cognitive processes involved in heroic decision-making.

## Discussion

### Major Findings and Implications

Research on heroism in the literature is growing. Recent research efforts have sought to propagate the belief that, with conscious self-awareness, all individuals are capable of a common sort of everyday heroism that transcends social contexts and some individual characteristics (Blau, Franco, & Zimbardo, 2009; Franco, Blau, & Zimbardo, 2011; Zimbardo, Breckenridge, & Moghaddam, 2013; Zimbardo & Wang, 2011). However, the thought process in which people engage to determine whether or not to act heroically has not yet been addressed in the literature with an empirical approach to the measurement of heroic cognition.

Establishing a decision-making pathway to engage in heroic action is beyond the scope of this research. Nevertheless, justification for why the present research sought to create a scale of heroic cognition assessing behavioral intentionality as a valid approach to furthering research efforts in this field is warranted. Broadly, intentions are one aspect of a potential pathway for heroic decision making. The theory of planned behavior (Fishbein & Ajzen, 1975) suggests that heroic self-perceptions and pro-heroic attitudes *in situ* arise from behavioral, normative, and control beliefs towards one's capacity for heroic action within a particular context (Ajzen, 2012). These self-perceptions may be preliminary elements in a reasoned action approach to the decision-making pathway to engage in heroism. Although intentionality alone is unlikely to be deterministic, such fundamental self-perceptions may be precursors to action, even in the presence of contextual constraints. These cognitions are likely to have

pragmatic utility for modern organizations. The author concedes that this measurement approach is limited (e.g., Norman, Sheeran, & Orbell, 2003), but it is perhaps useful given the preliminary nature of research efforts studying heroism. Future research may benefit from operationalizing heroism in diverse ways.

Beyond rationale for why the chosen measurement approach was selected, there is also a gap in related organizational literature on the construct. To-date, application of the heroism construct to modern workplace contexts that are fraught with potential to engage in heroic action has not necessarily been explicit. Rather, the organizational literature contains primarily assessments of only related constructs characterized broadly under the umbrella of a group of special organizational citizenship behaviors (Organ, 1988) known broadly as constructive/pro-social deviance (Spreitzer & Sonenshein, 2004).

The present research, therefore, attempted to deductively develop a pioneering measure of heroic cognition from heroism theory for use in workplace contexts (Franco, Blau, & Zimbardo, 2011). Results from exploratory factor analysis of the heroic cognition scale indicated that heroic self-efficacy and acceptance of self-sacrifice appear to be the most promising dimensions of heroism for further measurement development in future heroic cognition research (Table 1). These two factors emerged from exploratory factor analysis with the strongest and most simply-structured item factor loadings, accounted for the most variance of extracted factors, and exhibited the highest internal consistency of measurement (Table 2).

It is notable, however, that content validation results were, in some ways, contradictory to the emergence of factors in EFA. A discussion of why discrepancies may have existed is given in more detail in the following pages. Overall, more weight was placed on the content validation panel's critiques, as such critiques offered insights into the shortcomings of the measure that the author believes must be addressed in a revised approach to measurement. Given their critical nature, pre-eminent reliance on the content validation responses is also a more conservative approach to further developing the literature on heroism, which is likely to produce higher-quality research efforts.

Heroic self-efficacy, one's belief in one's ability to engage in heroic action, emerged as the strongest factor with the greatest number of items and accounted for three-to-four times more variance than other factors. This indicates that individuals found the heroic self-efficacy items on the heroic cognition scale to be most salient and answered them most cohesively, yielding the most favorable pattern of partial correlations observed among items within that factor. Drawing upon the broader and extensive literature on Self-Efficacy Theory (Bandura, 1977), the emergence of this factor may suggest that one's efficacious beliefs about one's ability to be heroic are critical to one's heroic self-concept.

Although the factor emerged with strong factor loadings and moderate internal reliability, content validation for the heroic self-efficacy items failed. These results are inconsistent and reasons concerning why are only speculative. Nevertheless, the comments provided by the content validation panel provide some insights concerning how this paradox occurred. Validation panel SMEs

indicated that items were too comprehensive, lengthy, and potentially confounded with elements of anti-social trait measures, simultaneously providing participants who responded to the survey with definitions of the entire heroism construct and a consistent assessment of self-admiration, entitlement, and/or arrogance. This observation was perhaps especially true for heroic self-efficacy items (Appendix A). Participants, therefore, may have interpreted the items as a cohesive block of measures assessing one central construct, which yielded a favorable factor statistically. The content of those items in the emergent factor, however, does not reflect the intended construct of heroic self-efficacy alone. This explanation accounts for the apparent discrepancy between successful emergence of a heroic self-efficacy factor, but unsuccessful content validation.

A search of the literature for heroic self-efficacy specifically yielded no direct prior empirical exploration of the construct. Related organizational psychology literature exploring change-oriented organizational citizenship behaviors (OCBs) suggests that the decision-making process to act may be complex and contextual. In a structural equation model of change-oriented OCBs, role-breadth self-efficacy was an important predictor of taking action, but felt-responsibility for constructive change was an even stronger predictor (López-Domínguez, Enache, Sallan, & Simo, 2013). Both role-breadth self-efficacy and felt responsibility for constructive change were also preceded in the path by contextual factors, such as developmental leadership, an innovative climate, and resource availability. These results indicate that the decision to engage in pro-



social organizational action is contingent upon context, climate, emotional cognition, values, and perceived competence in one's job role.

There is also evidence that change-oriented OCBs are contingent upon psychological empowerment (Choi, 2007) and an individual's identification with his/her work unit (Seppala, Lipponen, Bardi, & Pirttila-Backman, 2012).

Applying these findings to the operationalization of heroic cognition in this research, heroic self-efficacy alone is unlikely to be deterministic. Although organizational contexts requiring heroic action are more extreme and require self-sacrifice in ways that exceed the demands of many other change-oriented OCBs, the effect of heroic self-efficacy on taking organizational action is likely also dependent upon similar factors.

Concerning the second factor, it was not surprising that acceptance of self-sacrifice emerged as a key component of the heroic cognition construct because self-sacrifice has been consistently identified in the literature as a critical dimension of heroic action (e.g., Becker & Eagley, 2004; Franco, Blau, & Zimbardo, 2011; Rankin & Eagley, 2008). This research may suggest further evidence that individuals recognize the role of self-sacrifice in the heroic decision-making process. However, the extent to which acceptance of self-sacrifice is unique to the heroism construct and goes beyond that of altruism (Rushton, Chrisjohn, & Fekken, 1981) remains unclear.

Furthermore, although the factor emerged, internal reliability was notably poor and only three items loaded successfully onto the factor. Given the wide array of contexts assessed in the items hypothesized to load onto acceptance of

self-sacrifice (Appendix A), the author argues that the scale produced such varied responses that cleaner pattern loadings on the factor and consistency of individuals' responses across items within the factor were elusive. This may also help to explain why none of the SME ratings for the self-sacrifice items indicated items were essential. In summary, poor factor psychometrics and lack of support by SMEs are congruent results that both suggest future efforts might seek to more narrowly define contexts in the items for this factor.

Several works have debated this issue. Earlier arguments on the subject specified that courageous resistance, a subset of altruistic behavior and congruent with the definition of heroism used in the present research, is distinct from altruistic and bystander intervention behaviors because courageous resistance is more continual, risky, and premeditated (Shepela et al., 1999). Similarly, civil courage, brave reactive behaviors that seek to demonstrate discontentment to formal authority about policies or events, requires greater responsibility, more empathy, and is less likely to lead to universally-desirable outcomes than simple helping behaviors (Greitemeyer, Fischer, Kastenmüller, & Frey, 2006). Most recently, it has been argued that heroic action is more self-sacrificial, and that heroic actors choose to behave heroically with knowledge of the likely risks and without thought of tangible benefits to the self (Franco, Blau, & Zimbardo, 2011).

Although the emergence of self-sacrifice as a dimension of heroic cognition is, therefore, congruent across related literatures, there is contentious debate surrounding motives for self-sacrificial action. Some have argued that self-sacrificial behavior is only engaged in when the sacrifice is made on behalf of kin

(Hamilton, 1964), when the actor expects reciprocity from those for whom the behavior was chosen (Trivers, 1971), or as a “costly signal” to draw attention to one’s favorable traits (McAndrew & Perilloux, 2012; Zahavi, 1977). Additionally, most people endorse the ideal that self-sacrifice, even to the point of death, is an admirable choice; yet, when they are presented with hypothetical scenarios that would require them to sacrifice their lives for others, people are far more likely to say they would lay down their life for others in a group to which they feel affiliated or “fused” than for strangers (Swann et al, 2014). In contrast, others have argued that self-sacrificial decisions are made without thought of benefits to the self except to confirm one’s morality and beliefs in the preeminence of virtue, even when action is taken on behalf of others who have wronged the self-sacrificial actor in the past (Turillo Folger, Lavelle, Umphress, & Gee, 2002).

There are contrasting arguments for why people engage in self-sacrificial behaviors, but this author favors the argument that self-sacrifice is undertaken to affirm and remain congruent with one’s morality. Such an argument is also congruent with the theory of heroism that self-sacrifice is undertaken on behalf of others with no thought of external gain (Franco, Blau, & Zimbardo, 2011). Nevertheless, expectations of reciprocity, intending to signal virtuosity to upper level management with the hopes of signaling one’s readiness for promotion, or acting only on behalf of one’s work unit to which one feels intensely affiliated (not necessarily for the benefit of all) may also explain some outwardly pro-social OCBs. Whether or not OCBs that arise from more selfish motives can still be categorized as “heroic” is primarily subject to rhetorical debate, an issue beyond

the scope of this work. Ultimately within the scope of this research, the author encourages further exploration of the unique role of acceptance of self-sacrifice in predictive models of self-sacrificial organizational action.

The other two emergent factors from factor analysis in this research were less promising. The third factor, awareness of contextual constraints, was not reliably measurable, and accounted for only a very small amount of the variance. Furthermore, it contained only 3 items, two of which were originally written for what was anticipated to be a fourth factor (acknowledgment of barriers to success). Reviewing the content of the acknowledgment of barriers to success items suggests that participants may have interpreted its items to be of a highly-similar nature as the awareness of contextual constraints items (Appendix A). Contexts that should compel one to take action may inherently possess qualities that are indicative of barriers individuals might encounter in the choice to act heroically or not (Franco, Blau, & Zimbardo, 2011). Although the awareness of contextual constraints factor was not usable due to low reliability (Table 1), future scale development efforts should consider the theoretical overlap of context and barriers.

The fourth emergent factor contained only reverse-coded items and exhibited content from all four originally-anticipated factors. Heroism theory provided no explanation for this factor (Franco, Blau, & Zimbardo, 2011), as it appeared to provide no import beyond checking for data quality by comparing these item's scores to scores on factors in other items to ensure that individuals were not answering at random. The literature confirms that the use of a mixture of

reverse coded items beyond this purpose may be ill-advised (Streiner & Norman, 1995).

### **Strengths, Limitations, and Future Directions**

The study's greatest strength was its reliance upon existing heroism theory in the literature. Items were deductively derived directly from existing discourse in the literature to create a heroic cognition scale for workplace contexts (Franco, Blau, & Zimbardo, 2011). The theoretical underpinnings of the scale were further enhanced by the potential relationships between heroism and existing constructs in the organizational literature (e.g., Organ, 1988; Spreitzer & Sonenshein, 2004; Warren, 2003). Given the prevalence of harmful organizational deviance in modern organizations (e.g., Henle, Giacalone, & Jurkiewicz, 2005; Robinson & Bennett, 1995), research exploring more constructive organizational members' reactions to negative cognitive and emotional job states is timely. Additionally, the study benefited from statistical validity, as the dimensionality of the construct of heroic cognition was formally assessed via methods of exploratory factor analysis advised in the literature (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

There were, however, notable limitations to the study design. Although the author received some feedback from peers in the field in the item-writing stage of the research, formal content validation prior to any data collection and pilot-testing may have been advisable. A thorough review of the literature was undertaken prior to item-writing (Broome, 2000), but pilot-testing (DeVellis, 1991) was not done and content validation (Lawshe, 1975) was only completed

after data collection. Having completed pilot-testing and content validation prior to data collection may have helped to circumvent item length and wording issues, and potential content confounds within the items identified by the SME rating panel. Completing this process at an earlier stage may also have revealed the most notable limitation of the study: directly assessing self-report heroic cognition may not be the best approach to studying the construct.

Some aspects of the heroic cognition construct as defined in this research, including feeling efficacious in the ability to act heroically and acceptance of self-sacrifice, may be useful predictors of heroic intentions and behaviors (Fishbein & Azjen, 1975). However, the direct measurement of self-perceptions of one's own heroic attitudes and beliefs is likely subject to response bias that may limit the utility of the construct for organizational application. The experimental design of this research allowed individuals to respond anonymously to heroic cognition scale survey questions online from the privacy of any location they desired. Nevertheless, participants may have answered questions to match their perceptions of the most socially-desirable answers, rather than responding truthfully in accordance with their actual attitudes and beliefs (Paulhas, 1991; Rosenthal & Rosnow, 1991). Future research on the heroic cognition construct should include measures to assess social desirability (e.g., Jacobson, Brown, & Ariza, 1983).

Furthermore, the present research examined only self-perceptions of heroic cognition, not others' perceptions of one's capacity for heroic action. Although others' perceptions of one's heroic potential are likely to be subjective

and varied (Franco, Blau, & Zimbardo, 2011), a multi-rater methodology that assesses both self and others' ratings may provide more compelling evidence of the construct validity of heroic cognition (Campbell & Fiske, 1959; Platt, 1964).

Follow-up heroic cognition scale analyses were initially planned for a second set of data, as advised in the methodology literature (Hinkin, 1998), but exploratory factor analysis and content validation results did not mandate further testing. Planned analyses in a second study included confirmatory factor analysis to verify scale dimensionality, a test-retest reliability analysis, and a predictive model of intentions to engage in heroic action to establish initial convergent, discriminant, divergent, and predictive validity of the heroic cognition scale. However, further scale development that is informed by the results observed is needed prior to follow-up scale validation.

More specifically, the exploratory factor analysis results in the present research suggest that the two most promising heroic cognition dimensions for revision and development may be heroic self-efficacy and acceptance of self-sacrifice. Follow-up scale development efforts might include additional pre-data collection qualitative methodologies, such as focus groups (Carry, 1994) or a phenomenological approach (Crabtree & Miller, 1992), to ensure that items capture sufficient breadth and depth of the two dimensions. It would also be advisable to simplify item wording and shorten item length to make the items more accessible to less-advanced levels of reading comprehension (Fry, 1977).

The revised measures should then be tested with a separate second set of data (Hinkin, 1998). Ultimately, an organizationally-contextual predictive applied

model should be tested that includes other theoretically-related and distinct constructs to establish a nomological network (Landy, 1986) for initial convergent, discriminant, divergent, and predictive validity. Borrowing the methods from related change-oriented OCB research is a logical progression after scale revision and further exploratory factor analysis (e.g., López-Domínguez, Enache, Sallan, & Simo, 2013). For example, a structural equation model including identification with work unit (Shepela et al, 1999), psychological empowerment (Choi, 2007), and felt responsibility for constructive change (Morrison & Phelps, 1999) as mediators in the predictive relationship between the antecedents of heroic self-efficacy and acceptance of self-sacrifice, and the outcome of organizational heroic action (measured via a hypothetical scenario), could provide clarity regarding the role of these heroic cognition dimensions in the organizational heroism decision-making pathway. Modeling contextual organizational factors may also reveal boundary effects of the motivational value of heroic self-efficacy and acceptance of self-sacrifice (Dutton & Ashford, 1993).

### **Conclusion**

The present research attempted to advance the growing but limited heroism literature by creating a multi-dimensional measure of heroic cognition that can be used to generate more empirical discourse on the study of heroic action in workplace contexts. Further scale development and refinement is needed prior to initial validation studies. It is notable that direct operationalization of the theorized dimensionality of heroic cognition (Franco, Blau, & Zimbardo, 2011) was not supported by much of the factor analysis results or any of the content



validation results in the present research. Because of the methodological limitations of the author's work, it is unclear whether the failure to produce a factor structure specified in the literature is more attributable to lacking theory or researcher misspecification in operationalization of the theory. However, at least part of the proposed factor structure was supported. The emergence of heroic self-efficacy and acceptance of self-sacrifice as key dimensions of heroic cognition indicates potential for further research using at least a portion of the framework here established. It is the firm opinion of the author that future integrative work that seeks to combine related literatures on civil courage, courageous resistance, constructive deviance, and heroism with change-oriented organizational citizenship behaviors has the potential to meaningfully impact both theory and practice in the organizational and broader social psychological literatures.

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**Appendix A**

## Heroic Cognition Scale

The heroic cognition scale was developed for this research. It was conceptually derived from Franco, Blau & Zimbardo (2011), Zimbardo & Wang (2011), and Blau, Franco, & Zimbardo (2009).

*Heroic self-efficacy*

I would be able to stand up against unethical policies at my workplace.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I think of myself as a courageous person of action.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I am confident that I could confront my coworkers if I saw them doing something wrong.

1 2 3 4 5  
Strongly Disagree Strongly Agree

If I saw my boss doing something illegal, I would have the courage to report my boss to the proper authorities.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I would feel powerless to confront unethical behaviors that I witnessed at work.  
REVERSE CODE

1 2 3 4 5  
Strongly Disagree Strongly Agree

If coworkers behave unethically, I would have no power to confront them.  
REVERSE CODE

1 2 3 4 5  
Strongly Disagree Strongly Agree

I could never stand up to injustice. REVERSE CODE

1 2 3 4 5  
Strongly Disagree Strongly Agree









I would fight an organizational policy I did not agree with until I got my way, even if the policy was relatively unimportant. REVERSE

1 2 3 4 5  
Strongly Disagree Strongly Agree

Policies at my workplace are only worth challenging if they are unethical. REVERSE

1 2 3 4 5  
Strongly Disagree Strongly Agree

*Acknowledgement of barriers to success*

I know that I would need a good strategy to overcome obstacles that would prevent me from achieving a good cause at my workplace.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I would have to overcome barriers in order to take a successful stand for something I believe in at my job.

1 2 3 4 5  
Strongly Disagree Strongly Agree

If my coworkers were doing something unethical, they would try to prevent me from exposing them.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I will not be able to govern all of the outcomes of my attempts to confront wrongdoing at my workplace.

1 2 3 4 5  
Strongly Disagree Strongly Agree

I have thought about things that might cause me to fail if I were to take a stand for something I believe in at my workplace.

1 2 3 4 5  
Strongly Disagree Strongly Agree

