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Original Article

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Safety Talk and Safety Culture: Discursive Repertoires as Indicators of Workplace Safety and Health Practice and Readiness to Change

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Abstract

Background: Small construction businesses (SCBs) account for a disproportionate share of occupational injuries, days lost, and fatalities in the US and other modern economies. Owner/managers of SCBs confront risks associated with their own and workers' safety and business survival, and their occupational safety and health (OSH) related values and practices are key drivers of safety and business outcomes. Given owner/mangers are the key to understanding and affecting change in smaller firms, as well as the pressing need for improved OSH in small firms particularly in construction, there is a critical need to better understand SCB owners' readiness to improve or adopt enhanced OSH activities in their business. Unfortunately, the social expectation to support safety can complicate efforts to evaluate owners' readiness.

Objectives: To get a more accurate understanding of the OSH values and practices of SCBs and the factors shaping SCB owners' readiness and intent to implement or improve safety and health programming by comparing their discourse on safety with their self-rated level of stage of change.

Methods: In-depth, semi-structured interviews were conducted with 30 SCB owner managers. Respondents were asked to self-rate their safety program activity on a 5-point scale from unaware or ignorant ('haven't thought about it at all') to actively vigilant ('well-functioning safety and health program for at least 6 months'). They were also asked to discuss the role and meaning of OSH within their trade and company, as well as attitudes and inclinations toward improving or enhancing business safety practices.

Analysis and results: Respondents' self-rating of safety program activity was compared and contrasted with results from discourse analysis of their safety talk, or verbal descriptions of their safety values and activities. Borrowing from normative and stage theories of safety culture and behavioral change, these sometimes contradictory descriptions were taxonomized along a safety culture continuum and a range of safety cultures and stages of readiness for change were found. These included descriptions of strong safety cultures with intentions for improvement as well as descriptions of

safety cultures with more reactive and pathological approaches to OSH, with indications of no intentions for improvement. Some owner/managers rated themselves as having an effective OSH program in place, yet described a dearth of OSH activity and/or value for OSH in their business.
Conclusion: Assessing readiness to change is key to improving OSH performance, and more work is needed to effectively assess SCB OSH readiness and thus enable greater adoption of best practices.

Keywords: construction; intervention readiness; small business

Introduction

Risk and management challenges in the small construction business sector

Small construction businesses (SCBs) with 10 or fewer employees represent a majority (84%) of all construction enterprises and nearly one-third of the construction workforce in the USA [Bureau of Labor Statistics (BLS), 2017]. These small enterprises face significant risks and challenges from market volatility and worksite hazards, just as their larger counterparts do, but with disproportionate effect. Prior to the 2008–2012 recession, the 7-year survival rate of new construction establishments was about 30% (Knaup and Piazza, 2007). The construction sector accounted for nearly 20% of all workplace fatalities in 2014 (BLS, 2016), and the fatality burden is disproportionately experienced by small construction firms (CPWR, 2013).

The business owner is key to understanding risk control and affecting change in smaller firms (Hasle *et al.*, 2009). To survive as SCBs, owners must navigate fluctuating markets and compete with larger firms and peers who may under-bid by cutting corners. Owners often manage issues such as sales, planning, human resources, and accounting, in addition to participating in labor (Hasle *et al.*, 2009). Average employee tenure has been shown to be about 1.5 years shorter in smaller establishments compared to larger ones (Hope and Mackin, 2007), and research with small construction companies has suggested that the safety attitudes and values of owners, and their ability to hire and retain workers who share those values are critically important in small construction companies (Wojcik *et al.*, 2003). Thus, many of the common challenges of general business management add to the difficulties SCB owners face in managing occupational safety and health (OSH).

Among challenges SCB owners face, OSH is one of the areas they can directly improve; contractors who emphasize safety, concern for workers, and compliance with regulations have fewer OSH issues (Hinze and Gambatese, 2003). As effects of non-compliance on profit are uncertain, small businesses are less likely to engage in OSH activities, which are often perceived as costly and time-consuming (Kotey and Folker, 2007; Sinclair and Cunningham, 2014). The limited data available indicate significantly less OSH training in SCBs compared to larger firms (Dodge Data & Analytics, 2016; Cunningham *et al.*, 2018). Despite difficulties allocating resources to OSH, safety efforts can be crucial to business survival: firms in high-risk industries, including construction, which failed after 1–2 years had an average injury rate about 2.5 times higher than successful companies (Holizki *et al.*, 2006).

Safety talk as a tool for understanding readiness to change

Owner behavior is key to organizational change in smaller businesses, and being able to reliably assess SCB owners' readiness for change and its relation to safety practice would guide more effective strategies for assisting this over-burdened industry segment. To know what SCB owners do for OSH, it would be ideal to observe OSH practice on jobsites, but conducting observations of multiple SCBs is a challenging practice. A comprehensive understanding of how owners practice OSH would require systematic observations and considerable effort. Self-ratings of safety behavior can also be inaccurate. That is, the validity of self-reported estimates of most socially desirable injury prevention behaviors will be high when the true prevalence of the actual behavior is common, but this validity will be low when the behavior is not common (Nelson, 1996). Analysis of the verbal OSH behaviors of owner/managers, or 'safety talk', may be another useful way of understanding how descriptions of safety practices relate to readiness for change, and thus inform more effective dissemination of OSH resources to SCBs.

The depiction of small firms as difficult to influence with OSH regulation and improvement campaigns results partly from the failure to understand the perspectives of business owners and their workers on their terms and at their worksites (Eakin, 1992; Hasle *et al.*, 2011). Examples of successful outreach efforts are limited, and require intense application of resources (Cunningham and Sinclair, 2015; Parker *et al.*, 2017). The owner's role in safeguarding business survival combined with regular and often informal interactions with employees result in workplace social orders largely oriented around the owner/manager's values, priorities, and practices (Hasle

et al., 2009). Hasle and colleagues (2011) interviewed owner/managers of 23 small Danish construction and metal processing firms and elicited accounts of work-related injuries. Although they found respondents generally espoused positive attitudes toward enhancing safety, some owners downplayed risks and/or potential benefits of preventive activities. Most reported they pursue an acceptable standard of safety, and related that pursuit to their identity as an overall decent person. Yet few gave safety a very high priority.

The authors consider these contradictory claims through the conceptual lens of 'identity work', a feature of how individuals make sense of change in organizations with regard to prior self-narratives (Weick, 2000). These processes were observed in some owners' disinclination to prioritize safety practices. In recalling and describing action and identity in certain contexts (such as workplace safety) an owner being interviewed may endeavor to present him/herself as a reasonable and just employer. Thus, some owners narrate their standpoint as one from which—having told workers to be safe or pointed out their own safety concerns—they have handed over responsibility for safety in regard for worker autonomy and social boundaries (Eakin, 1992). In exchange for being freed from having to monitor worker behavior and violate boundaries of a family-like relationship, the owner maintains a defensible moral position both in the interview context and in the event a worker is injured. Descriptions of safety practices can therefore also reveal more enduring positions, standpoints of action, or identities in workplaces.

Using differences in assigning responsibility for workplace safety and attitudes toward regulation (Vickers *et al.*, 2005), Hasle (2011) classifies firms along a scale of safety value and practice. Ranging from 'avoidance' to core 'business strategy', the categorization reflects differences in perceived importance of meeting safety standards across firms. Like other typologies of OSH performance and working environments (see Table 1), the categories represent safety grades or positions. Hudson (2007) studied large petrochemical firms and constructed a similar typology using 'pathological', 'reactive', 'calculative', 'proactive', and 'generative' as grades representing a progression of organizational safety cultures involving increasing safety awareness, commitment, and action. Hudson notes the similarities of his typology with the transtheoretical model (TTM) of behavior change (Prochaska and DiClemente, 1983), which conceptualizes health-related behavior change as a cognitive-behavioral process that begins with the individual's recognition of the problematic behavior and proceeds—often with outside assistance—through a series of stages to ultimately alter that behavior pattern. The TTM is also comparable and consistent with Hasle's levels of safety practices, particularly in small business, and while Hudson's typology was developed in the context of research on large petrochemical firms with much greater organizational complexity and more highly regulated safety practices, its focus on collective safety culture/climate provides a useful framework for conceptualizing and assessing self-reported behaviors and speech acts as indicators of safety practice in organizations of any size.

The aim of this research was to better understand the factors shaping SCB owners' readiness and intent to implement or improve OSH programming. Following the lead of Hasle *et al.* (2011) and guided by the heuristics presented in Table 1, we qualitatively analyzed 30 in-depth interviews with SCB owner/managers concerning their OSH values, attitudes, and practices. By comparing owner self-rated levels of stage of change (1–5) with their earlier descriptions and accounts of safety attitudes and values, and by comparing responses across multiple owners, the more implicit, discursive forms of safety messaging and positioning become apparent. Our analysis attempts to reconcile the different self-presentations of safety engagement or positions along a continuum of safety consciousness and practice.

Methods

In-depth interviews were conducted with owners or managers of 30 SCBs (10 or fewer employees) between October 2011 and January 2012. A market research firm and several local Chambers of Commerce in and around a large Midwestern city assisted in recruiting businesses based on NAICS industry classifications at the 3-digit level. Solicitations for participation were emailed to a list of 65 companies with specialties including remodeling/renovation, residential building, HVAC, electrical, commercial, and carpentry. The first 30 respondents that met selection criteria (currently operating a construction business with 2–10 employees) were selected. Selected characteristics of the 30 SCB participants are shown in Table 2.

Participants were contacted by market research firm representatives via telephone inviting participation in a NIOSH-sponsored study that would involve a confidential, compensated, 1- to 1.5-h interview 'to get [respondent] opinions about occupational safety and health needs and reasons for seeking occupational safety and health information'. Only five of those initially contacted for participation refused to participate. This high

Table 1. Typological and change frameworks for describing organizational change in safety and health performance.

Categorization of value for safe work environment (Hasle *et al.*, 2011)	Attitude toward regulation (Vickers *et al.*, 2005)	Safety culture formulation (Hudson, 2007)	Stage of change formulation (Prochaska and DiClemente, 1983)
Small firm		**Large organization**	**Individual**
Avoidance Owner tries to ignore OSH	**Avoiders**	**Pathological:** 'Who cares as long as we're not caught?' Information is hidden, new ideas crushed Safety is not a value Responsibilities shirked Failure is covered up	**Pre-contemplation** No problems here. We've done what we can. No need for information. No need to change.
Necessary evil Owner accepts that basic OSH control is necessary to avoid authorities, but a waste of time and money	**Minimalists**	**Reactive** 'Safety is important, we do a lot every time we have an accident' Safety is becoming a value, but more as an afterthought: 'and be safe!' Accidents attributed to worker stupidity/ inattention	**Contemplation** Awareness of problem. Realization that further improvement is possible. No change in behavior and no steps taken. Information and knowledge increase.
		Calculative/bureaucratic 'We have systems in place to manage all hazards' Some information may be ignored Recognition that safety needs to be taken seriously Safety procedures mechanically applied Responsibility is compartmentalized; Failure is handled justly	**Preparation** Intent to take action. Steps are taken to prepare for change.
Standards must be met Owner accepts need to meet a reasonable, acceptable standard	**Positive responders**	**Proactive** 'We work on the problems that we still find' Safety is becoming an internalized value Information is sought	**Action** Practices and behaviors modified. Much backsliding
Business strategy	**Proactive learners**	**Generative** 'Safety is how we do business around here' Information is actively sought Safety is a fully internalized value Responsibilities are shared; Failure causes enquiry	**Maintenance** New behavior replaces old behavior

Table 2. Characteristics of SCBs ($N = 30$) described in this study.

Characteristic	*n*	Percent
Type of trade/industry		
Commercial construction	13	43
Residential and other[a]	17	57
Firm size		
1	9	30
2–3	8	27
4–6	8	27
7+	5	17
Years in business		
Less than 5	10	33
5–10	5	17
11–20	7	23
21–30	6	20
31+	2	7
Business demographics		
Minority business	17	57
Female owned	4	13
Employs day laborers	12	40
Employs family	15	50
Top problems faced/mentioned		
Worksite adjustment issues	16	53
Getting work, estimating, bidding	15	50
Time pressures production	11	37
Workforce issues	10	33
Client concerns, communication	10	33
Getting paid, cash flow	8	27
Self-rated OSH readiness		
Unaware or not concerned (1)	1	3
Thinking about starting (2)	6	20
Making preparations (3)	8	27
Enacting improvements (4)	5	17
Actively vigilant/prudent (5)	10	33
Analytic rating of safety culture		
Pathological	2	7
Reactive	5	17
Calculative/bureaucratic	13	43
Proactive	2	7
Generative	8	26

[a]HVAC, electrical (2), carpentry (3), masonry (4), demolition, painting, glass, paving, roofing, plumbing.

success rate was likely helped by the relatively high compensation of $150 per participant, which we felt might attract those whose OSH attitude and opinions would otherwise predispose non-participation. The study procedures were reviewed and approved by the NIOSH Institutional Review Board, and the research was supported by NIOSH funding.

Interview procedure

The interviews occurred in locations convenient for participants and included participants' offices, local restaurants, and the market research firm offices. The same interviewer (the first author) conducted all 30 interviews. At the outset of each interview, the interviewer restated the study purpose, assured confidentiality, and disavowed any connection with OSHA. Along with these reassurances, respondents were urged to speak frankly and share what they 'really think' to help researchers understand how small construction 'worksites and businesses really operate'. At no point in recruitment, consent procedures, or interviews did the interviewer state construction work was dangerous; however, the intentions to understand the OSH needs of SCBs and workers were clearly stated.

A semi-structured interview guide addressed the topics and categories listed (1–14) in Table 3. Initial general queries concerning each firm's age, trade specialties, and worker characteristics (1) were followed by open-ended questions about key challenges faced on a daily basis (2) and respondent definitions of OSH (3). Subsequent items addressed: types of OSH-related information participants currently used and preferred (4–7); OSH concerns and incidents (8, 9); needs for training and/or information on OSH at their worksite (10, 11); a description of how OSH fits into the business mission (12); and constructs associated with the TTM (13) and theory of planned behavior (TPB, 14) as they relate to SCB owners' intentions to improve OSH. Due to word-count constraints we have limited our analyses and discussion in this article to material provided in response to Items 3, 12, and 13, from which we derive three indicators of owner/manager safety values and intentions for OSH activities.

Analysis

Owner responses to Item 13, in which they rated themselves at one of five points along a continuum of OSH awareness and practice, or stage of change, from '1' 'haven't thought about it at all' ('pre-contemplation') to '5' 'well-functioning safety and health program for at least 6 months' ('maintenance') represent one, explicit indicator. For comparison with this self-rated stage of change indicator, we examined owner safety talk and language in response to two open-ended items asked earlier in the interview: Item 3, 'What does OSH mean to you?'; and Item 12, 'Where or how does OSH fit into your business mission?' Our analytic ratings (1–5) were guided by the definitions and examples provided in Table 1, drawing particularly from Hudson's (2007) graded typology of organizational safety cultures

Table 3. Organization of interview topics.

Order	Interview topic	Item, query, or probe examples	Analysis/report
A	Business characteristics	Trade, size, longevity, demographics,	Table 2
B	**Top challenges/problems**	**'What do you consider to be the top challenges or problems faced in your business?'**	**Methods narrative**
C	**Define OSH**	**'What does occupational safety and health mean to you?'**	**Results narrative; Table S1**
D	Information sought	n/a	
E	Information received		
F	OSH information sources		
G	Format of sources		
H	Top OSH concerns		
I	Preventable injury history		
J	OSH training and bidding		
K	OSH info on employees		
L	**OSH and business mission**	**'Where or how does occupational safety and health fit with your business mission?'**	**Results narrative; Table S1**
M	**Stage of change question**	**OSH engagement and prioritization (1–5)**	Tables 2 and S1
N	Theory of planned behavior	n/a needs further consideration	

because of its emphasis on the kinds of verbal responses emblematic of different levels. Each author independently rated the safety culture content of responses to these items on a scale ranging from '1' for 'pathological' to '5' for 'generative', and there was agreement on 22 of 30 ratings (73%). In the eight instances of disagreement, no rating differed by more than one point on the 5-point scale; and after further examination and discussion of the cases, the authors agreed upon a single 'analytic rating' indicator for each. Finally, using a more discourse-centered analysis focusing on how owner/managers described, or rationalized safety responsibility in their OSH definitions, we categorized responses in terms of agency, or ability to influence OSH, responsibility for OSH, and the context of OSH activities.

Results

Identity and challenges in SCB talk

Owner responses to the first open-ended question in the interview, 'what do you consider to be the top challenges or problems faced in your business?' can be read as short discourses or narratives involving the owner playing different roles facing diverse antagonists in different arenas of action (such as bidding work, employee relations, regulatory compliance, etc.). They also provide a fuller sense of the priorities that compete with OSH for attention in SCB activity and practice (see Table 3 for a summary). Their concerns appeared equally divided between more external or, outward-looking roles and arenas of focused action such as getting work, estimating/bidding, and competitors versus more internally focused worksite adjustment issues, time and production pressures, client relations/communication, etc. Safety is presumably a component of the latter, but it went virtually unmentioned among these perceived challenges. These top concerns provide a fuller sense of the discourses that compete with 'safety' for attention in SCB activity and practice.

Nevertheless, in the context of questions asking them to describe how they define OSH and how OSH fits with their business mission, their self-rated readiness to start new OSH programming or add/improve their existing OSH programming, the modal response '5' 'well-functioning safety and health program for at least 6 months' ('maintenance') was selected by 10 (33%) owner/managers, suggesting little perceived need for improvements. Several others rated themselves in the 'preparation' stage (3) (n = 8), with all five stages selected by one or more participants (see Table 2). Our analytic ratings of safety culture and discourses also covered the full range of ratings, with most respondents rated as calculative/bureaucratic (3) (n = 12) and generative (5) (n = 8). Thus, two groups emerge as either aiming for compliance or potentially maintaining high levels of OSH performance. However, these two groups do not correspond directly across levels of OSH readiness and safety culture. Table S1 in the Online Supplementary Material shows the distribution of owner self-ratings of stage of readiness for OSH changes and analytic ratings of safety culture, along with quotes from participants.

Of the 19 respondents who rated themselves in either contemplation (2), preparation (3), or action (4) stages, only five differed by more than one corresponding culture rating. All 11 who were rated at a different level of safety culture than their self-rated level of readiness for change were assigned ratings that were higher than their self-rated stage of OSH readiness. They 'understated' their practices in a rhetorical sense. These owner/managers described OSH a central value for their business, and the impact of OSH on the well-being of workers as well as others.

Conversely, the 10 respondents who self-rated their stage as maintenance (5) were assigned safety culture ratings two or more levels lower in the corresponding levels from Table 1. They rhetorically overstated their practices. Those with this pattern of discrepant analytic and self-ratings described drivers of OSH activity as reaction and compliance to government regulation, or in more vague paternalistic descriptions of keeping their workers safe, with some dismissing OSH as secondary to profitability or as rhetorically overstated in the context of the interview itself.

Drivers and barriers in definitions of OSH

When asked what OSH means to them, owners discussed safety agency and responsibility with a handful of drivers (or agents) and barriers: worker-related, owner-related, government-related, and shared safety responsibility. Respondents who described worker responsibility-related drivers and barriers for OSH tended to describe lower levels of safety activities and stages of contemplation (2) and preparation (3).

Owner/manager responsibility-related drivers and barriers for OSH suggest greater emphasis on the owner directing and being responsible for his or her worksite, in some cases as part of an exchange for labor performed. These are among the respondents who rate themselves as maintaining a well-functioning OSH program, but rated at lower grades of safety culture. As noted above, government and regulation-related drivers and barriers for OSH were also evident among owner/managers who rated their OSH programming as not needing improvement (5) while describing more reactive (2) and calculative (3) approaches to safety.

Owner/managers that described shared responsibility-related drivers and barriers for OSH were among those that described the highest-rated levels of safety culture and described OSH both in terms of values and activities. Communication with employees, recognizing their contributions to a safe work environment, and sharing OSH as a value are all examples respondents provided. These respondents also evidenced preparation and action stages of OSH improvement.

Place of OSH in the business' mission

Participants were also asked to describe the place of OSH in their business' mission. Responses to this item referred to financial and productivity costs of safety failures, and indicated a lack of specific safety activities. Respondents also specifically noted ranking OSH relative to profit in the context of their business' mission. Those who self-rated in the contemplative, preparation, and action stages tended to discuss OSH very specifically as a value related to the mission of their business, and described daily communication with employees. Those that did not recognize need for improvement or had no plans for change tended to place emphasis on profit or dismiss the value of OSH.

Discussion

Implications for information needs and activation

SCB owners described a range of safety values, intentions, and practices that span the continuum of safety culture and stages of change. These results suggest it is possible to assess where an SCB is positioned along a continuum of safety culture and readiness for improvement based in part on the safety discourse of owner/managers. In assessing an SCB's stage of change, we can also describe corresponding characteristics of their safety culture, what the next stage of improvement may consist of, and suggest general strategies for influencing change toward more positive stages.

The assessment of SCB owners' stage of change related to adopting new or improved OSH practices can guide two basic intervention strategies—increasing awareness and providing resources. Strategies aimed toward communicating the costs of remaining static and benefits of change may be effective for those exhibiting minimal awareness of the need for improved OSH management and/or with more reactive safety cultures. For those indicating some level of consideration or planning for improvement, or more proactive safety cultures, providing resources and assistance for OSH improvement (such as free consultation or guidance materials) may be more useful. The key point is that one size does not fit all—messaging focused on raising awareness will not be valuable to those already contemplating change, and providing free or affordable resources will not be valued by owners who do not recognize need for improvement.

Other research has demonstrated that enacted safety management is quantitatively lesser in smaller

construction firms (e.g. Dodge Data & Analytics, 2016; Cunningham *et al.*, 2018). The findings presented here shed some light on 'why' there is less OSH activity in SCBs. In some cases, SCB owners simply do not perceive a need for making improvements. This perception mirrors the findings of Hasle and colleagues (2009), where SCB owners take the stance of having done all they can and should do to ensure workers' safety within the social and moral boundaries in family and small-group dynamics.

This research also suggests a reason why SCB owners reach for more proactive or generative safety cultures and take on related changes. The comparison of safety as a value versus a priority (where values are more enduring while priorities may shift; Geller, 2005) seems supported by the safety talk of SCB owners. Those that plan to improve and/or describe safety's meaning as a part of how they conduct their business are likely to have stronger safety practices; however, more work is needed to disentangle espoused and enacted practice for this segment of the construction industry. One potential approach informed by research on safety climate (e.g. Zohar, 1980) is to focus on the 'espoused' safety practices of the business. That is, attempt to improve what the business says both in person and in writing about safety in their company. In most SCBs, this improvement would be developing a written OSH program including an explicit notion of OSH as a value for the business. While there may be differences between 'espoused' and 'enacted' safety climates, the non-existence of any espoused safety practices, policies, or procedures in SCBs may offer one opportunity to employ language as a tool.

Analysis of owner safety discourses: accounts of versus accounting for safety practice

In giving 'accounts of' their workplace safety values and practices, owners are speaking on their own behalf and in their own interests, and thus they are also rhetorically 'accounting for' their attitudes and practices. Like the interviewer's confidentiality assurances and more tacit verbal and non-verbal communications during the interviews sought to create a context of candor (and 'succeeded' in varying degrees across the interviews), owner responses enacted moral postures performed with varying levels of 'success', or influence. As such, a more performative understanding of interview language considers how owners, challenged in the form of questions about OSH conduct, not only provide information but also discursively and tacitly manage impressions by (re)constituting and rationalizing their safety practices and values within and across the multiple embedded contexts of the interview. By analyzing the relation between the 'what' and 'how' of owner safety talk, between its information-giving and performative modes across 30 interviews, we were able to discern variations in the coherence of owner/managers' messaging about safety.

In some cases, SCB owners rated themselves highly on their stage of change but evidenced lesser safety values and practices in their safety discourse. In some other cases, SCB owners rated themselves as rather low in their intention to change or improve OSH practices, but subsequent analysis indicated a more proactive level of safety culture. One possible explanation for this finding comes from the Dunning–Kruger effect (Kruger and Dunning, 1999), which describes the tendency of those who lack information on a topic to erroneously overestimate their knowledge or skill in said subject. To know how bad one is at something, one needs to have some knowledge of what it takes to be good at it, without which, one is likely to be overconfident about one's competency. Conversely, if one has a lot of knowledge about a topic, and a fairly good understanding of its complexity, one is more likely to underestimate one's abilities. Additionally, the high self-ratings among those who evidenced lesser safety values and practices may be due to the social desirability effect on self-reported injury prevention behaviors noted in the introduction.

These results also suggest a potential alternative value of a self-rating of maintenance, or having a well-functioning OSH program and not feeling a need for improvement. Given the incongruence between self-rated stages of maintenance and descriptions of OSH meaning and mission relevance, we may consider ratings of a maintenance status to actually indicate a need to either: (i) target this subgroup for specific awareness intervention, or (ii) separate this group from the target audience for intervention to better invest scarce OSH resources.

The most obvious examples of utility of the TTM are health behaviors, which raises a limitation of using the standard taxonomy of five stages of change in assessing readiness for a continuous improvement activity such as managing OSH. The behaviors of smoking cessation, eating vegetables, or exercising are clear actions that are easily observed, as are their maintenance. Managing OSH is somewhat different, as there is an implicit assumption that a proactive or generative safety culture includes a kind of perpetual action stage orientation. Applying the TTM to assessing readiness for OSH improvement will likely require some restructuring of interview items and operational definitions. Additionally, this investigation was limited by reliance on self-reports of OSH activities. Actual OSH performance data were

not collected, and observation of OSH activities would help to provide a more accurate assessment of safety culture within firms. Also, a self-selection bias among employers with more favorable OSH opinions may have been present among those recruited to the study. Future research should also include worker perspectives in similar interviews to gain a multi-informant assessment of safety culture.

These findings can be readily applied by intermediaries such as insurers, trade associations, and suppliers to segment their member/client groups for more specifically targeted group-level interventions to two or more subgroups (e.g. those most likely to respond to increasing awareness or providing resources). The findings of this research could also be applied in individual and one-on-one intervention contexts such as meeting with insurance agents, financial planners, brokers, etc. If rapid assessment indicates a clear pattern of current practice and either awareness of need for improvement or plans to do so, intervention agents can respond accordingly. While less effective for large-scale reach, this sort of individual approach is best suited for embedment in existing intermediary activities. Examples include a membership discussion with a trade association (perhaps at enrollment), choosing an insurance plan, or consultation prior to seeking financing for a project. It could also be embedded into subcontractor prequalifying procedures in construction with a couple of current activity, intention, and program-maturity related items which could indicate to general contractors how best to influence OSH activity among subcontractors.

Perhaps at a broader level, there is value in recognizing language as key to improving OSH performance. That is, much of the SCB industry is often described as hard to reach, under-resourced, and too difficult to achieve better OSH outcomes. Although actual OSH performance was not measured in this study, finding examples of owners who are performing well both in productivity and OSH and can articulate their achievement of high levels of performance may lead to change at the industry level. While such a goal will remain aspirational, a cultural shift away from SCB work as being dangerous and difficult to change is what is ultimately needed.

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