

## Commentary

# Components of an Occupational Safety and Health Communication Research Strategy for Small- and Medium-Sized Enterprises

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## Abstract

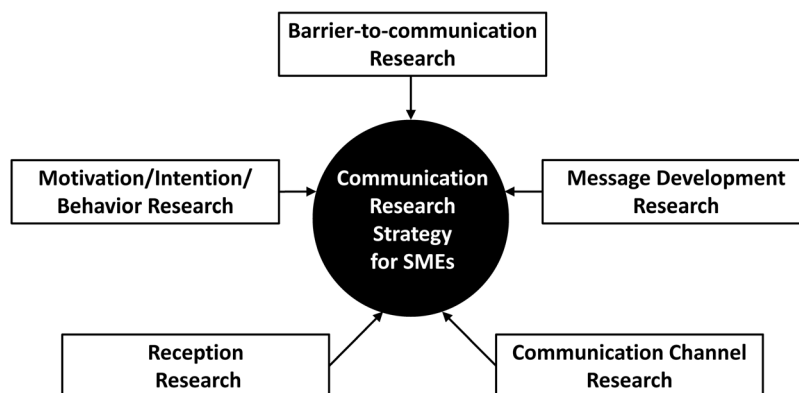
The majority of the global labor force works in firms with fewer than 50 employees; firms with fewer than 250 employees make up 99% of workplaces. Even so, the lack of extensive or comprehensive research has failed to focus on occupational safety and health communication to these small- and medium-sized enterprises (SMEs). Given that the magnitude of all occupational safety and health (OSH) morbidity, mortality, and injury disproportionately occurs in businesses with fewer than 250 employees, efforts to communicate with employers to engage in preventative occupational safety and health efforts merit attention. This article provides an overview of important components that should be considered in developing an occupational safety and health (OSH) communication research strategy targeting SMEs. Such a strategy should raise awareness about the diversity and complexity of SMEs and the challenges of targeting OSH communication toward this diverse group. Companies of differing sizes (e.g. 5, 50, 500 employees) likely require differing communication approaches. Communication strategies will benefit from deconstructing the term ‘small business’ into smaller, more homogenous categories that might require approaches. Theory-based research assessing barriers, message content, channels, reach, reception, motivation, and intention to act serve as the foundation for developing a comprehensive research framework. Attention to this type of research by investigators is warranted and should be encouraged and supported. There would also be value in developing national and international strategies for research on communication with small businesses.

**Keywords:** communication; motivation; occupational safety and health; reception; theory

## Introduction

This article explores what should be included in an occupational safety and health (OSH) communication research strategy focusing on the small- and medium-sized enterprises (SMEs) where the majority of the global workforce is employed (Targoutzidis *et al.*, 2014; BLS, 2015; Legg *et al.*, 2015; Pinder *et al.*, 2016). The need for such a strategy is predicated on the fact that the bulk of occupational injuries, illnesses, and deaths occurs in SMEs (Page, 2009; Targoutzidis *et al.*, 2014; BLS, 2015; Legg *et al.*, 2015). Communication is one of the interventions and tools used to achieve widespread OSH programmatic activities (Ashford, 1976; Levy *et al.*, 2006). Communication research is well-suited for examining OSH issues in organizations, as many workplace injuries and incidents may be related to communication challenges. These include access to and availability of safety information and the organizations' readiness to address OSH through safety campaigns or other means (Real, 2008). Currently, there is a gap in the research on how to best communicate OSH information to SMEs. Communication research in the OSH field has generally not been the focus of strategic thinking and even less so as pertains to these entities (Schulte *et al.*, 2003). The goal of this article is to raise awareness about the elements of communication research strategy that address SMEs (Fig. 1). It is not the strategy, but the precursor to a strategy. The concepts and ideas presented may be useful to individual investigators, but ultimately the article is meant to prompt the development of a comprehensive strategy for government organizations, nongovernment agencies, and authoritative entities for effective OSH communication to SMEs.

SME communication research should be viewed in the context of how communication fits into the larger picture of reducing occupational injuries, illnesses, and deaths among SMEs. Communication research should be seen as one aspect of intervention and translation research (Goldenhar *et al.*, 2001; Schulte *et al.*, 2017). Critical in OSH communication is the need to focus on the SME employer (or their designee) as the primary target of communication (Hasle *et al.*, 2009). In all businesses of any size, the employer is responsible for assuring the safety and health of the workforce. In SMEs, the employer is often the owner and manager. In thinking about the health and safety of the workforce, employers are often overlooked, and too often the conversation devolves to focus mainly on the behavior of individual workers. Individual actions of workers are important and their input and engagement is crucial to effective OSH programs. Other aspects of OSH communication can be described in terms of the 'Five W's' and one 'H' of journalism: 'Who', 'What', 'When', 'Where', 'Why', and 'How' (as shown in Table 1). For each of these questions, selective research issues based on information gaps could be identified for research. Previous research suggests that core issues pertain to understanding the barriers to communication; message development, in particular, communication channels, reception, and reach; and the factors that motivate employers to take action. These core issues, as well as accepted theories and models drawn from communication, health behavior, and social science research that may be useful in addressing these issues, will be discussed in subsequent sections. Little attention has been given previously to examining how these models and theories might apply to and have utility for examining OSH contexts (DeJoy, 1996). The application of theory facilitates a better



**Figure 1.** Important components for a communication research strategy for SMEs.

**Table 1.** Framework for considering what research is needed to enhance communication with small businesses.

Who is communicating?	<ul style="list-style-type: none"> <li>• Government Agencies</li> <li>• Trade Associations</li> <li>• Insurers/Workers Compensation</li> <li>• Unions</li> <li>• Labor</li> <li>• Peer businesses</li> <li>• Others (e.g. customers)</li> </ul>
What are they communicating?	<ul style="list-style-type: none"> <li>• Hazard awareness information</li> <li>• Ways to address/control hazards</li> <li>• Encouragement to start a safety program</li> <li>• Other</li> </ul>
When do the communications occur?	<ul style="list-style-type: none"> <li>• Regularly</li> <li>• Periodically</li> <li>• When employer accesses them</li> <li>• After an illness, injury, or death occurs</li> </ul>
Where do the communications go?	<ul style="list-style-type: none"> <li>• To employers</li> <li>• To high-risk sectors/subsectors</li> <li>• To the general public</li> <li>• To intermediaries</li> </ul>
Why communicate?	<ul style="list-style-type: none"> <li>• Communicate information to move employers to action</li> <li>• To develop safe and healthy workplaces</li> </ul>
How to communicate (i.e. channels)?	Direct/Indirect <ul style="list-style-type: none"> <li>• Campaigns</li> <li>• Letters</li> <li>• Publications (newsletters, reports)</li> <li>• Social media</li> <li>• Websites</li> <li>• Through intermediaries</li> <li>• Local community or trade meetings</li> </ul>

understanding of the underlying causes of health and safety problems (in the workplace) and helps inform decisions about the design/implementation of appropriate interventions to address these problems (Gielen and Sleet, 2003). In designing OSH communication strategies targeted to SMEs, no one theoretical approach applies to all situations, and this article is not intended to be prescriptive about which approach is desirable or even feasible. Rather, our intention is to begin shaping the contours of a potential strategy for effective OSH communication to SMEs on which other researchers, stakeholders, and policy makers may build and expand.

Broadly speaking, employers continually seek information on how to make their enterprises more productive and viable. Time pressures, heavy workloads, intense market competition, regulatory, insurance and tax requirements, and payroll maintenance leave little time for thinking about OSH, which often is viewed as unrelated to production and business operations (Stave et al., 2008; Olsen et al., 2012). Depending on where the small business falls on the lifecycle continuum (i.e.

existence, survival, success, take-off, and resource maturity), it may have different information needs and seeking behaviors (Churchill and Lewis 1983; Wilson 1997; Blandiu et al., 2003; Hasle and Limborg, 2006; Parker et al., 2007; Sinclair and Cunningham, 2014). Moreover, the size of the firm can have a large impact on the extent to which an SME employer receives a communication, understands it, is able to act on it, and actually acts on it (Cunningham et al., 2014; Legg et al., 2015). It is in this context that OSH communication must be considered. Deciding what research should be conducted also depends on what is already known about communicating with SME employers. One of the realizations in the last three decades of research on SME interventions is one size does not fit all (Mayhew, 1997; Champoux and Brun, 2003; Hasle and Limborg, 2006).

As described earlier, the urgent, public health need to improve communication to SME employers is driven by the large burden of occupational injuries, illnesses, and deaths experienced by SMEs. Moreover, it has been well described that SMEs routinely engage in fewer safety

activities than do larger firms (Lentz *et al.*, 2001; Dennis, 2003; Hasle and Limborg, 2006; Lentz and Wenzl, 2006; Sinclair and Cunningham, 2014; Legg *et al.*, 2015). The reasons for this disparity include fewer uncommitted resources, greater time demands on managers, poorer manager attitudes about safety, fewer employees to engage in OSH activities, such as safety committees, and a strong culture of independence from outside connections, such as unions (Blandiu *et al.*, 2003; Hasle and Limborg, 2006; Parker *et al.*, 2007; Sinclair and Cunningham, 2014). However, it is important to realize that SME is a variable descriptor that includes many sophisticated enterprises some of which have highly effective OSH programs (Pinder *et al.*, 2016). The research needs for communicating with these types of SMEs may be different from SMEs less oriented to OSH.

Historically, communicators in the OSH area, particularly governmental agencies, have given limited attention to communicating with SMEs. Yet such engagement is imperative given that the large magnitude of SME injuries, illnesses and deaths do not appear to have been significantly reduced in recent years (BLS, 2015). Nonetheless, there are useful communications that have been accessed by employers to some extent. Examples of these include: ‘OSHA’s recommended practices for safety and health programs’ (OSHA, 2018b); NIOSH’s ‘Small Business Resource Guide’ (NIOSH, 2003); EU OSHA’s ‘Improving Occupational Safety and Health in SMEs: examples of effectiveness assistance’ (EU OSHA, 2003, p. 34); and the United Kingdom Health and Safety Executive’s (HSE) ‘OH health and SMEs: focused intervention strategies’ (HSE, 2004). SMEs may also seek OSH information or receive communications from various intermediaries (see section on communication channel research).

The extent to which agencies invest in SME-related research in general may be a critical factor that can affect communication and intervention research in particular. This is not specifically unique to SMEs. Generally speaking, for all sizes of business, OSH communication research by government, universities, and other agencies has not been considered a high priority. More broadly, because communication is at the distal end of the research-to-practice continuum, there is need for research to translate OSH research to practice, and communication is a critical part of these efforts (Schulte *et al.*, 2003; Dugan and Punnett, 2017; Schulte *et al.*, 2017).

### Barriers-to-communication research

The barriers to OSH communication to SMEs have not been systematically characterized; however, significant work on barriers to interventions and affecting change

in SMEs can serve as a foundation for considering communications to employers and their information-seeking behaviors (Champoux and Brun, 2003; Brousseau and Li, 2005; Kvoring *et al.*, 2015; Masi and Cagno, 2015; Sunindijo, 2015; Cagno *et al.*, 2016). What can be gleaned from this literature is that SME employers rarely engage in an active search for OSH information. Moreover, these employers often do not read OSH material received in the mail (Keller and Cunningham 2016; Schulte *et al.* 2003). SME owners and employers have inadequate resources in terms of attention and time for contact regarding OSH matters, and they tend to react to immediate needs, such as ‘making payroll’ and otherwise keeping their company growing (Hasle and Limborg, 2006; Legg *et al.*, 2015). Furthermore, the large number of SMEs makes direct contact difficult (Curran and Blackburn 2000; Pinder *et al.*, 2016). Research suggests contacting SME employers through intermediaries, such as trade associations and insurers, may work as a communication strategy (Dennis, 2003; Olsen *et al.*, 2012).

Researchers could explore additional barriers to communication with SMEs, such as inappropriate settings, channels, and activities that impair reaching an audience. Communication programs are often termed ‘failures’ because they do not reach people with sufficient repetition (NCI, 2004). Perhaps, the number of communications sent is an important factor or barrier to communication.

In comprehensive reviews, MacEachen *et al.* (2010) and Masi and Cagno (2015) identified the following barriers for small businesses in addressing OSH: lack of knowledge of OSH rules and approaches; often lack of formal workplace systems and resources for OSH; incompatibility of information, policies, and legislation to fit the reality of small businesses; ability to downplay risks and not use OSH knowledge; susceptibility to having social relationships at work shape OSH views; and perception that the individual worker is responsible for navigating risk. Workers’ attitude toward OSH can also be a barrier to the implementation of OSH interventions in SMEs (Masi *et al.*, 2014). All of these issues can be seen as topics for research to better understand barriers to OSH communications.

### Message development research

Lessons and best practices from the fields of health and organizational communication may provide guidance for OSH communication outreach to SMEs. For example, communication researchers have long recognized the value to condition message development—i.e.

segment the audience—by defining subgroups of a population according to common characteristics (NCI, 2004). Segmentation facilitates the development of messages, materials, and activities that are relevant to the audience's knowledge, needs, and attitudes, which helps identify the best channels for reaching each group (NCI, 2004). Another useful communication strategy segments a population on readiness to change. This strategy requires an assessment to differentiate target groups based on their responses (see [Cunningham and Jacobson, this issue](#), for an in-depth discussion of this approach). Segmenting can be accomplished through either active or passive strategies. In the case of SMEs, one active strategy may be to categorize subgroups on the basis of publically available data and information. For example, through a two-step process of inquiry, an agency or intermediary would provide a sample of candidate small businesses and then messages would be tailored for the target population based on that inquiry. However, response rates could be low and obtaining master lists for first contact could also be difficult.

The passive means for segmentation, which includes multiple messages in the communication, is of more practical use. One of the most modifiable elements in the standard source-message-channel-receiver model ([Shannon and Weaver, 1949](#)) is the message—that is, the actual information to be communicated. It may be possible to segment the receiver audience by incorporating in the message a series of options that will draw focus to the subset of information tailored for the receiver. This can be done with variations or 'if' statements, for example, 'If your company is a start-up, this message is for you'. Or, 'If your company has less than 20 people, this message is for you'. The objective here is to draw in the recipient to the message that applies to them. The timeframe for gathering the attention of a recipient may be no more than a few seconds so having a recipient read a message may require precise descriptors in which a recipient can see themselves.

Segmentation could also be guided by other characteristics that define SMEs beyond number of employees and financial resources. Characteristics such as business age, structure, workforce, manager centrality, and culture can guide efforts to differentiate subsegments among SMEs, and reflect the psychosocial experience of people that are represented in SMEs ([Cunningham et al., 2014](#)). For example, research indicates family-owned businesses are less likely to offer training as firm growth exceeds 20 employees compared to nonfamily owned businesses ([Kotey and Folker, 2007](#)). Also related to structure and manager centrality, most sole proprietorships are very small in terms of number of employees (95% have

<20), and most owners also provide direct production labor ([Champoux and Brun, 2003](#)). Particularly in such smaller, owner-centered firms, the owner of a smaller organization often perceives it as an extension of his or her personality, and personality is intricately bound with family needs and desires ([Carland et al., 1984](#)). These subsegments of SMEs may suggest communication strategies, which appeal to the individual business owner's personality and family values. However, these communication strategies are bound up with the realities, and resource limitations, SMEs face. For example, according to study by Zierold and colleagues ([Zierold et al., 2012](#)), adolescents in the study who worked in family-owned business reported a higher percentage of severe injuries than those working for a nonfamily employer. The authors suggest that dynamics may exist in a family-owned business such that young workers feel that they have to 'do as their parents say', regardless of the implications for their personal safety (p. 193). Thus, more research is needed to understand the unique challenges, risk profiles, values, and motivations SME owners/employers experience and how effective OSH communication may be tailored to address these factors.

Another approach to segmentation is based on people's risk-efficacy profiles ([Rimal and Real, 2003](#); [Real, 2008](#)). Efficacy, from [Bandura's \(1977\)](#) social cognitive theory, refers to a person's confidence in their ability to enact a health-related behavior and a belief that enacting the behavior will result in a safer or healthier outcome. According to [Rimal and Real's \(2003\)](#) risk perception attitude (RPA) framework, when high risks are perceived and strong efficacy beliefs are present, people are more ready and able to engage in self-protective actions ([Rimal et al., 2009](#)). The RPA segments people into one of four groups, from low-risk perceptions/weak efficacy on one end of the continuum ('indifference attitudes') to high-risk perceptions/strong efficacy ('responsive attitudes') on the other end. In the middle of the continuum, people with low-risk perception but with strong efficacy beliefs are posited to have 'proactive' attitudes and those with high-risk perceptions and weak efficacy beliefs are said to have 'avoidance' attitudes ([Rimal and Real, 2003](#); [Rimal et al., 2009](#)). People with indifference attitudes, for example, are not motivated to act due to a low-risk perception and because they are not confident in their ability to engage in behaviors that bring about the desired outcomes ([Rimal et al., 2009](#)). Conversely, those with responsive attitudes believe they are at risk and confident engaging in activities to mitigate those risks. The RPA has been used previously in OSH communication research to examine employees' self-protective and information-seeking behaviors related to safety



(Real, 2008). An extension of this research would be to explore how employers' risk-attitude profiles affect their decisions to engage in OSH communication to reduce the incidence of injuries among their employees. Employers could be provided with OSH information that is tailored to their specific risk perception/efficacy profile. For example, the indifference group could be targeted to receive OSH messages that enhance both risk perceptions about OSH and their efficacy beliefs, while the responsive group could be engaged with communication strategies that reinforce both efficacy as well as vulnerability to OSH risks and hazards (Rimal *et al.*, 2009).

Another potential approach to segmentation could be to adapt the four categories (of OSH management and approach) used by Champoux and Brun (2003): inactive/uninformed; inactive/traditional/unstructured; active/participatory/unstructured; active/participatory/structured. These could be addressed by the following questions: Does your company lack a formal OSH program? Does your company have any specific OSH activities? Does your company involve workers in OSH activities? Does your company have an extensive OSH program? For each of those categories, there could be a message tailored for them. For the most part, all four categories may align with firm size. In other words, larger businesses may be more likely to have established/formal OSH programs. However, as Pham *et al.* (1993) note, firm size has not been found to be a sufficient driver for prevention efforts and firm size of about 50 or fewer employees seems to be where a qualitatively different messages are needed to address OSH. The four scenarios described are not explicit about firm size and are more based on capability or experience.

Specific topics of OSH messaging may also require the need for effective segmentation. For example, there is increasing interest among OSH researchers and practitioners in promoting Total Worker Health® (TWH) approaches among smaller firms (Schwatka *et al.*, 2018). "TWH is defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being (NIOSH 2017). For example depending on the industry and related hazards, high-risk SMEs that are resource poor may have more robust safety programs than SMEs in low-risk industries (Schwatka *et al.*, 2018)." There is a need to develop messaging strategies that account for differences in existing emphasis and understanding of both more traditional OSH and more holistic approaches to improving worker well-being. Segmentation by industrial sector is yet another important consideration for both general OSH and TWH messaging research for SMEs. Overall, findings from

research on communicating with small businesses suggests unique features and issues need to be taken into account (Pham *et al.*, 1993; MacEachen *et al.*, 2010).

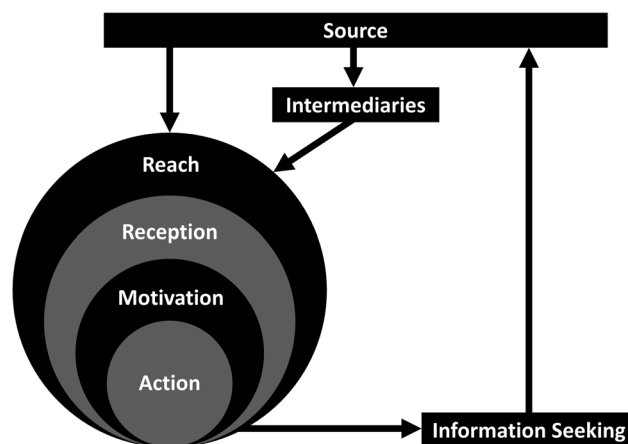
In all types of segmentation, it is important to utilize language that resonates with the recipient rather than the sender. Conducting formative or extended research on the language used in messages is a useful focus for investigation. Messaging about OSH might also be enhanced by combining it with Total Worker Health messaging. Businesses that invest in health and well-being of their employees achieve notable economic gains (Goetzel 2016). Investigating in research on TWH health messaging is a useful priority in a communication strategy.

### Communication channel research

The use of intermediaries has been proposed as a potentially effective way of reinforcing messages and reaching small business employers, and doing so through a trusted or at least a potentially acceptable source that a small businesses recipient might listen to. In previous work, we, and others, have described models for using intermediaries to reach SMEs (Hasle and Limborg, 2006; Hasle *et al.*, 2011; Sinclair *et al.*, 2013; Bruening *et al.*, 2015; Cunningham and Sinclair 2015; Okun *et al.*, 2017) (Fig. 2). Such an approach requires that the intermediaries can be effectively engaged and acquainted with the public health source and the information to be communicated. Intermediaries may be considered an extension of the information source or a part of the message channel. Regardless, utilizing intermediaries such as insurers, trade associations, labor unions, accountants, and product suppliers has been identified as having the potential to influence small businesses (Hasle *et al.* 2011; Sinclair *et al.*, 2013; Bruening *et al.*, 2015; Cunningham and Sinclair, 2015).

The various intermediary communication models typically begin with an 'initiator' organization such as a public health agency, nongovernmental organization (NGO), or OSH organization that uses its own or someone else's message to communicate with a small business owner/employer (Sinclair *et al.*, 2013). The models assume the intermediary organization interfaces or regularly interacts with small business decision-makers to communicate information to them. The small business communication model developed by Sinclair *et al.* (2013) has subsequently been extended to incorporate aspects of social exchange theory and diffusion of innovation theory into the initiator intermediary interaction (Bruening *et al.*, 2015). Recommendations based on the extended model include:

1. Conduct formative research with candidate organizations that could serve as intermediaries;



**Figure 2.** Focal areas for SME communication research.

2. Engage influential individuals identified in formative research to become involved in the communication;
3. Collaborate with intermediaries on how they will engage small business (Bruening *et al.*, 2015)

Barriers to utilizing intermediary organizations in communicating OSH information should be a focus of research (Eakin *et al.*, 2010; Bruening *et al.*, 2015). For example, findings from Buller *et al.* (2012) on dissemination to employers through professional organizations of a health campaign to promote occupational sun protection among employees in the North American ski industry suggest that industry professional associations alone were not sufficient to achieve high program use. Personal communication and support of the end-users (i.e. managers) by the research team was needed to ensure that the prevention program was well implemented and achieved the intended behavior change (program adoption and sustained implementation). Future research should also consider explorations of settings, channels, and activities that can be used to reach SME employers.

## Reception research

Among the stages of persuasive communication, three important ones are reception, processing, and response. In an occupational study, Booth-Butterfield *et al.* (2009) defined these stages as follows: reception is the stage where messages are made available to receivers (Hornik, 1997, 2002; Shimp, 2000; Snyder and Hamilton, 2002); processing is the stage where receivers attempt to comprehend, yield to, and elaborate on the message, ultimately storing it in memory (Petty and Cacioppo, 1986; Eagly and Chaiken, 1993; Chen and Chaiken, 1999; Petty and Wegener, 1999); and finally,

response is the stage where receivers change beliefs, evaluations, and intentions that support and motivate behaviors (Ajzen and Fishbein, 1980; Ajzen, 1991). Reception has been found to be a critical communication variable (Snyder *et al.*, 2016; Hornik, 2002). Reception can be increased, but the cost may be prohibitive for government and nonprofit agencies (Booth-Butterfield *et al.*, 2007). One way to assess reception is to measure reach. Reach is a marketing or advertising term that refers to the number of people exposed to a specific media message during a specific time (NCI, 2004). Reach is an important metric for evaluating the effectiveness of various mass communications to small businesses. It is also important to note that reception is necessary, but not sufficient on its own to produce the desired health and safety behaviors. Also, necessary are ‘widespread political and financial support from a variety of groups, which may not otherwise have the will or resources to provide all required materials and policies’ (Booth-Butterfield *et al.*, 2007).

Knowledge may be the most important resource for a firm’s survival (Schulte *et al.*, 2004; Senapathi 2011; Crawford *et al.*, 2016). There may be value for reception research to consider two business concepts concerning knowledge: stickiness of knowledge and absorptive capacity (Von Hippel 1994; Indarti 2010). The relationship between the *stickiness* of knowledge in the message and the recipient firm’s *absorptive capacity*, including interactions with intermediaries, can be triggered in the message.

## Stickiness

Knowledge is considered sticky if its accessibility or tractability is low (Indarti, 2010). Accessibility is a multidimensional concept that includes the degree to

which the knowledge is easy to understand and use. When knowledge is not easy to absorb it can be considered 'sticky' (Szulanski, 1996, 2000; Indarti 2010). Stickiness also refers to the complexity of the knowledge and the cost that accrues to the receiver to engage with that knowledge and be able to use it. Stickiness of knowledge affects the capability of a firm to access or obtain knowledge from the source or the external environment (Indarti, 2010).

### Absorptive capacity

The uptake of the message and the information it conveys is influenced by various capabilities of the recipient. This characteristic has been referred to as 'absorptive capacity'. 'Absorptive capacity is a fundamental capability in the knowledge-dominated modern business era' (Zahara and George, 2002; Indarti, 2010). 'Absorptive capacity is the set of organizational routines and processes, by which firms acquire, assimilate, transform and exploit knowledge' (Indarti 2010). These activities occur even in the smallest firms, albeit they may not be discrete or formal (Indarti, 2010). Nonetheless, absorptive capacity is critical to business competitiveness. A basic element in the absorptive capacity is interactions. 'Interaction is a key element in gaining access to acquiring and developing new knowledge' (Indarti, 2010). A firm routinely interacts with customers, suppliers, accountants, consumers, advertisers, competitors, regulators, and others. The mechanism of interaction is triggered when a firm is in need of a resource from the external environment in order to survive. Interactions create the value chain network (Indarti 2010).

In other words, there is a need to go beyond the business case for the OSH message and to include means for following the guidance in the message and this can include recommendations of resources and intermediaries. The intermediaries may also need to be primed or educated by the source on the content of the message. Indarti (2010) reported the lower the level of stickiness of a message, the higher the absorptive capacity. The impact of stickiness of external knowledge on a firm's absorptive capacity has also been shown to be mediated by firm size as it is stronger for larger than smaller firms. Additionally, the interaction of firms affects their absorptive capacity and size mediates that relationship (Indarti, 2010).

Further, in considering stickiness and absorptive capacity, knowledge can be categorized into three types: sensory, coded, and theoretical information (Nooteboom, 1996; Cijssouw and Jorna, 2003; Indarti 2010). Coded knowledge, in particular, has been described as information available in manuals, instruction guides, and

written procedures (Indarti, 2010). The more coded the knowledge, the more accessible it is to firms assuming that some motivational threshold has been crossed and their attention is captured (Indarti 2010). Messages can be enhanced by inclusion of coded knowledge such as reference to government documents and recommendations. Coded knowledge also has been found to have a significant effect on companies' absorptive capacity (Indarti, 2010).

This finding may be useful in message development and reception research. Ultimately, research that focuses on the reception of messages by employers may be of greatest utility. However, one of the major lessons learned in the last 20 years of research is that direct communications to small businesses are of limited utility (Legg *et al.*, 2014; Cunningham and Sinclair, 2015). That utility might be increased in segmented subgroups with unique high-hazard issues. Reception has been found to be a critical communication variable (Hornik, 2002; Snyder *et al.*, 2016). Reception may also be enhanced by using intermediaries to deliver information, but the cost may be prohibitive for government agencies (Booth-Butterfield *et al.*, 2007). Therefore, research on cost-effective ways to increase reception by SMEs would be of value.

### Motivation/Intention/Behavior research

A fundamental challenge in social science research, including in areas of OSH, involves how to motivate people to see health and safety-related information (Real, 2008). Reception is necessary but not sufficient on its own to produce desired health and safety behaviors. The message itself has to motivate employers to take action. One of the largest barriers in OSH communication with SMEs that needs investigation is motivating employers to take action to address OSH issues (Eakin, 1992; Hasle and Limborg, 2006; Kvorning *et al.*, 2015). The role of motivation for employers to take OSH action has not been investigated extensively (Hedlund *et al.*, 2010; Kvorning *et al.*, 2015).

Providing information to and motivating small business employers is a complex endeavor. The motivation literature distinguishes intrinsic from extrinsic motivation. Intrinsic motivation is when an individual does something because it is inherently interesting and enjoyable, and extrinsic motivation is when an individual is influenced from the outside (Deci and Ryan, 1985). While external rewards or incentives are often needed to initiate a new safety activity, these external motivators may be too powerful to get employers to engage in the target behavior because they will come to expect those incentives every time they engage in the target behavior. The strategy



is to use the external incentives to get the desired behavior and allow the employers to experience the intrinsic reinforcement associated with that behavior to maintain it (Geller *et al.*, 1990). More research is needed to define the parameters for obtaining enough extrinsic control to initiate OSH activities among employers, but not too much control so as to diminish perceived internal control and intrinsic justification (Geller *et al.*, 1990).

A robust communication literature highlights a variety of factors that influence the amount of processing message recipients give to persuasive messages, which includes characteristics of the communicator and the receiver, but also of the message itself (O'Keefe and Jensen, 2008) and how it is framed (i.e. prospect theory: Tversky and Kahneman, 1981).

Whether the message's appeals are gain-framed or loss-framed may influence the degree of message processing (Rothman *et al.*, 2006). A 'gain-framed' appeal emphasizes the desirable consequences associated with a behavior/action while a 'loss-framed' appeal emphasizes the undesirable consequences associated with that behavior. A meta-analytic review (based on 42 effect sizes,  $N = 6378$ ) by O'Keefe and Jensen (2008) found that, with some caveats, gain-framed messages engendered significantly (albeit slightly) greater message engagement than did loss-framed messages. Insights from this research could be helpful in designing gain-framed messages for SME employers to enhance OSH in their businesses.

Various factors could motivate small business decision-makers to follow the OSH message. For example, employers may be looking for the 'business case' for OSH, which can be interpreted and applied different ways (Veltri and Ramsey, 2009; NSC National Safety Council, 2013; OSHA, 2018a). Standard return on investment (ROI) and value of investment (VOI) are useful tools for making a business case (Linhard 2005; Goetzel 2016). Thus, the various ways to make and use the business case for OSH could be a primary focus of research (Dugdill *et al.*, 2000). A study by Brousseau and Li (2005) suggested that efforts to increase owners' OSH intentions and their behaviors should focus on demonstrating positive employee health and product quality outcomes. A recent study demonstrated that in small businesses, the strongest drivers of action are those related to economic resources (Cagno *et al.*, 2016). Ultimately, there is a need to understand how employers process and use economic information in making OSH decisions.

## Theory-based approaches

Critical for communication research is the need for it to be theory-based (NCI, 2004). This means identifying the

theoretical basis for selecting a communication approach or anticipating how it is going to bring about the desired effect. Of particular utility are the theory of planned behavior (TBP; Azjen, 1991), the transtheoretical model of health behavior change (Prochaska and Velicer, 1997), the health belief model (Hochbaum, 1958; Rosenstock, 1960; Streicher and Rosenstock 1997), diffusion of innovations theory (Rogers 1983), social cognitive theory (Bandura 1977, 1986) inoculation theory (McGuire 1961), organization change theory (Beyer and Trice, 1978), RPA theory (Rimal and Real, 2003), and program theory (Rogers, 2008) to name a few with potential relevance to OSH communication with SMEs. Health behavior theories may be used to guide the development and evaluation of communication with employers. For example, the TPB has been widely used to predict numerous health-related intentions and behaviors (Montaño and Kasprzyk, 2008). Welbourne and Booth-Butterfield (2005) found that the TPB variables, attitude, subjective norms, and perceived behavioral control were significant predictors of safety intentions of managers (fire chiefs). The authors suggest that these results could be used to guide (communication) interventions to focus more specifically on creating positive attitudes toward safety, shaping managers' perceptions of how others would view these behaviors, and creating the belief that these actions are within their control.

In terms of SMEs, Brousseau and Li (2005) used the TPB to guide assessment of small business owners' intentions toward workplace safety. They found that small business owners with more positive attitudes toward safety had a higher probability of believing that improving workplace health and safety would make employees healthier and happier, show caring, increase employee productivity, lower workers' compensation costs, and increase product quality and lower costs (Brousseau and Li, 2005). These results suggest that communication interventions should be targeted to increasing owners' expectations about the positive outcomes of improving health and safety (Brousseau and Li, 2005).

Another approach to consider involves utilizing the RPA theory (Rimal and Real, 2003; Real, 2008), which was introduced earlier in this article. It has been demonstrated with workers that at a given level of risk, those with greater efficacy beliefs have more positive safety outcomes (Real, 2008). This may be a useful approach for communication to employers. In addition, social network theory and analysis could also be useful in investigating the role and potential of intermediaries in communicating with SMEs (Valente and Pitts, 2017). It is also important to consider how intermediaries are part of SME social networks and to understand how to motivate them to participate in the communication process and the exact nature of their role.

## Conclusion

Globally, SMEs are a major source of economic growth, innovation, and vitality. They constitute the majority of workplaces and experience a disproportionate burden of occupational morbidity, mortality and injury. Yet there are presently no major national or international research or policy efforts to comprehensively address OSH in SMEs and effectively communicate OSH risk information to these entities. The small business universe is difficult to characterize and it is not widely championed by agencies and groups focused on OSH. Nonetheless, there are a range of efforts and organizations that are aware of the small business OSH burden. It may be time for the development of national and international strategic plans for research on communicating with small businesses. While the focus here has been on identifying potential inputs to a comprehensive OSH communication research agenda, it is particularly important to identify which OSH topics might be included in the research. If the 'OSH community' can effectively address communication issues (i.e. barriers, message development, channels/reach, reception, motivation/intention/behavior) described in this article, it can move forward to reduce the burden of small business morbidity, mortality, and injury.

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## Disclaimer

The findings and conclusions in this report are those of the author (s) and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

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