

### 1.3. Mentorship and Safety

<b>Method</b> .....	<b>89</b>
<b>Search Strategy.</b> .....	<b>89</b>
<b>Screening Strategy.</b> .....	<b>90</b>
<b>Results</b> .....	<b>90</b>
<b>Description of Included Articles</b> .....	<b>91</b>
<b>Description of Identified Factors.</b> .....	<b>91</b>
Types of mentoring relationships.....	91
Formal mentorship .....	91
Informal mentorship .....	92
Mentor roles .....	92
Benefits of mentoring. ....	93
Socialization and social support.....	93
Communication and decision-making. ....	94
Workforce engagement. ....	95
<b>Discussion</b> .....	<b>95</b>
<b>Gaps in the Literature.</b> .....	<b>97</b>
<b>Recommendations.</b> .....	<b>98</b>
<b>References</b> .....	<b>98</b>

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### 1.3. Mentorship and Safety

In this section, we looked at mentorship (formal and informal) and its influence on safety engagement. A mentor is defined as “a cheerleader, coach, confidante, guide, resource/referral agent, advocate, and role model” (Pulce, 2005, p. 9). Pulce (2005) stated the most effective mentors welcome, share, support, point the way, explore new ideas, are experts in their field, and view mentees as equals. A mentee is the individual being mentored. Mentoring provides opportunities to learn from experiences of others (Cole, 2015). Cole (2015) stated in order for mentoring to be successful: The opportunities for mentoring need to be available; mutual benefit must be perceived by both parties; and organizations must design to allow for mentoring. Mentorship is defined as “a one-to-one relationship between a pair of unrelated individuals.” (Freedman, 1999, p. 31). Mentorship or mentoring has been present for many years and a number of definitions and characteristics of mentoring relationships have been reported in the literature; however no single definition exists. “Mentoring is about transition, change, and transformation” (Megginson, Clutterback, Garvey, Stokes, & Garrett-Harris, 2006, p. 28) utilizing an interpersonal relationship to positively impact employee socialization, learning, and career development (Noe, Greenberger, & Wang, 2002). The traditional mentoring dynamic involves the “guiding of a younger or less experienced person by someone who is older and more mature ... [and] assumes that the mentor has some quality – age, experience, skills, material or social advantage – that the mentee lacks” (Corney & du Plessis, 2010, p. 20) supporting deficit based mentoring programs used in workplace training programs.

The question guiding our scoping review was: How does mentorship (informal and formal) influence safety engagement of employees in the mining industry?

#### Method

A scoping search of the literature was undertaken using the following key terms:

1. Miners (miners or mining or “resource extraction” or industry) and
2. Mentoring (mentoring or mentors or coaching) and
3. Safety engagement (“risk taking behavior/behaviour” or “safety behavior/behaviour” or safety or “high risk behavior/behaviour” or “safety engagement” or “safety rule violation” or “accident proneness” or “risk perception” or “perception of safety” or “safety devices” or “workplace safety” or “work safety” or “risk tolerance” or “industrial accidents” or “occupational safety” or “occupational health”)

**Search Strategy.** The databases searched are listed in the results. From this search, we selected articles based on the inclusion/exclusion criteria. The inclusion and exclusion criteria were kept broad in that we did not specify the types of research methods to be included or excluded in order to capture as many research articles on the topic as possible. In our search, we collected articles that were pertinent in this topic area. The broad inclusion and exclusion criteria allowed us to explore the literature in this area more completely, see Table 1.

*Table 1. Mentorship Inclusion/Exclusion Criteria for Article Selection*

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>Articles with key terms in the title or abstract</li> <li>Peer reviewed</li> <li>Within 5 years</li> <li>English language articles</li> </ul>	<ul style="list-style-type: none"> <li>Editorials</li> <li>Commentaries</li> <li>Book reviews</li> </ul>

**Screening Strategy.** From the search results, we reviewed the title and abstract of each article to determine its inclusion in the scoping review. Each selected article was read by a team member and information pertinent to the study was extracted. Those not applicable to the scoping review were excluded. The selected articles were reviewed by all team members for inclusion in the study. A search of fourteen databases across business, education, and health for the expanded concepts of mentor\* or coaching, or role modeling; and safety, occupational safety, or cultural safety; and employee, worker, or personal engagement resulted in limited articles. Inclusion criteria were English journal articles, master's theses and doctoral theses from 2009-2014. In order for articles to be included in the summary, positive consensus from two team members was required, resulting in 30 abstracts being selected. Once duplications were removed, 26 articles were reviewed by all subcommittee members. Twenty publications were eliminated because their focus was not on mentorship and/or safety engagement and thus unable to address the research questions. A South African mining and mentorship case study was discovered by a team member while viewing a mentorship webinar. The team member contacted the author who informed her that the case study was published as a book chapter. The book was located and then the case study was reviewed by two team members. This book chapter was added resulting in eight publications for inclusion in the scoping review that include articles from the following industries: mining (two articles), oil and gas (one article), construction (three articles), human resources [HRD] (one), and nursing (one).

## Results

A brief summary of each article including its location, population studied, main issue addressed, comparison group, and primary outcomes is provided in Appendix G. Table 2 is an overview of the scope of the review.

*Table 2. Mentorship Database Searches and Results*

Database	No of articles found from search – title and abstract	Articles Selected for Review	Final article selection
Web of Science	3	38	7
Scopus	0		
ProQuest Dissertations and Thesis	1		
Nursing and Allied Health (EBSCO)	1		
Medline	0		
Eric	2		

Engineering Village	5
CBCA Business	4
Academic Search Complete	13
Soc. Abstracts	3
Embase	2
PsycInfo	0
CINAHL	1
ABI Inform	3

**Description of Included Articles.** Table 3 provides an overview of the types of publications, country of publication, and populations studied.

*Table 3. Population, Country of Research, and Type of Research*

Type of Research	Country of Research	Population
Quantitative	USA (2)	University engineering graduates (1)
• Intervention Pilot Study (1)	Australia (2)	Construction industry (3)
Qualitative	UK (1)	
• Interviews (2)	Ireland (1)	
Other	South Africa (1)	
• Literature Review (2)		
• Case Study (1)		

**Description of Identified Factors.** The articles were described as follows: Types of mentoring relationships, benefits of mentoring, socialization and social support, communication and decision-making, and workforce engagement.

**Types of mentoring relationships.** Two types of mentorship relationships were identified in the literature: formal and informal.

*Formal mentorship.* Five articles discussed formal mentoring relationships. A formal mentoring program requires additional processes and supports for ongoing effectiveness, and a formal mentoring structure can ensure all mentees have an assigned mentor with some basic framework to follow (Karallis & Sandelands, 2009). In a case study of a mentoring program at Kentz Engineers & Constructors, Karallis and Sandelands (2009) concluded individuals involved in formal mentoring programs early in their career and/or positions can assist in maximizing potential in an organization. The researchers outlined the following strategies to facilitate the formal mentorship process within their organization: A matching process; a development plan combined with a manual and rotation suggestions outlining specific outcomes; company specific workshops for frontline management and leadership skills; soft skill enhancements courses; functional and technical training; use of software to provide support, facilitation, and a peer networking forum; and, a management system to track outcomes. This formal mentorship program also had an organizational structure comprised of a senior corporate Human Resource (HR) manager, a regional HR manager, and a regional mentoring facilitator, with regular mentoring process reports sent to the Board of Management. Mentees were scheduled to attend workshops on frontline management skills to assist them in leading their mentoring relationship by maximizing on the mentor's skills and knowledge (Karallis & Sandelands).

Feedback to workers was seen by foremen to improve safety, however, smaller percentages of

crewmembers believed this statement to be true (Kaskutas, Dale, Lipscomb, & Evanoff, 2013). In a survey study of 1025 apprentices in the construction industry, Kaskutas et al. found mentees believed the mentoring relationship assisted to improve workplace safety, and once pilot project foremen were trained, the majority of crew members identified their mentoring needs were better satisfied. A study of American construction companies exposed similar challenges. In an investigation of safety knowledge management, Hallowell (2012) found a lack of documented structure or mentoring frameworks for safety programs. Leveritt (2010) proposed a work force engagement model which incorporates many formal mentoring processes and supports. The process begins in simulation training sessions where a trainer bases the topic for instruction off of the trainee's skill level, then utilizes coaching skills for debriefing; trainers then follow up with mentoring activities that occur outside planned training sessions; and, planned mentoring programs with designated roles ensure the processes and supports are ongoing (Leveritt). Mentoring relationships, whether formal or informal, have shown to have better longevity when mentees are involved in the selection of mentors, as choices are based on similarity of experiences and life situations (Corney & du Plessis, 2010). The act of mentoring itself can be formal or informal depending on the mentor role and the needs within the mentoring relationship. The mentor roles are pivotal to the relationship success.

*Informal mentorship.* Three articles discussed informal mentorship relationships. Harriss and Harriss (2012) found informal mentorship was more effective in providing support and professional development than formal mentoring. In a survey study of 106 male apprentices from the construction industry, Corney and du Plessis (2010) confirmed the apprentices accessed informal relationships for advice and encouragement. This research presented natural mentoring, a type of informal mentoring based on reciprocal relationship principles where mentor and mentee are considered peers (Corney & du Plessis). Chaudhuri and Ghosh (2012) presented a paper on reverse mentoring, which challenged traditional constructs defined previously, by describing a process where an advanced or trained person acquired knowledge from a younger less experienced individual especially with the use of technology. Chaudhuri and Ghosh examined the concept of reverse mentoring with older experienced workers learning technology from new younger hires. Despite the literature supporting the use of informal mentoring relationships, formal programs are more popular within organizations, even though they do not appear to be as effective (Harriss & Harriss, 2012).

*Mentor roles.* Six articles discussed roles of mentors. One article identified mentor roles in general. Corney and du Plessis (2010) found the majority of apprentices' psychosocial support came from informal mentoring relationships with the key roles being counselor, peer, and support person; and formal mentoring relationships included role modeling and career development. One article described coaching as a mentoring role. Coaching via training laid the foundation for the workforce engagement model which centers on trainers and operators during simulated learning events where coaching occurs as part of skill development in a planned training session followed by debriefing (Leveritt, 2010). Leveritt (2010) described a mentoring program which used the training/coaching interaction designed to facilitate skill development or refresher training, and generally focused on simple tasks to overcome skill deficiencies; the simulator trainer drove the process, and trainers provided the operators with information

during informal conversation in planned one-on-one meetings. In this pilot project when trainers uncovered individual performance deficits one-on-one mentoring occurred, and if a group's work was substandard then group retraining would take place. In this program, daily communication between trainers and operators continued through field work-logs that established trust and moved the trainers' actions more towards traditional mentoring roles. Leveritt found the trainers' lack of applied knowledge in specific areas of technological practices significantly interfered with their ability to mentor trainees.

Four articles discussed the role of trainer. Kaskutas et al. (2013) reported once the foremen were trained, the majority of crew members identified their mentoring needs were better satisfied. Leveritt (2010) stated orientation for new hires, refresher training, reliability data collection, incident and near miss reports, unplanned maintenance, changes made to mine rules, new equipment, and new technologies were identified as training needs and potential opportunities for mentors to share information. Karallis and Sandelands (2009) reported a number of workshops provided the training framework. Kaskutas et al. (2013) developed an eight hour foreman training course on fall protection and designed daily workplace safety awareness mini communications; and, daily mentoring messages were described as both task and safety oriented. In this pilot project, mentees reported learning occurred best when working together with the mentor in the work environment (Kaskutas et al., 2013). Abbott (2010) described the mentor as a professional representative from the organization who routinely interacted with and assessed skill development progress. The mentor's performance management role, graduates' perception of the mentor's power over promotions, and job rotations negatively impacted the teaching learning process (Abbott, 2010).

***Benefits of mentoring.*** Three articles touched on the benefits of mentoring. Two articles discussed the benefits of mentoring in general. A mentees' goal in a mentoring relationship focuses on addressing deficits, improving self-esteem, and reducing risk-taking behaviors which increase the likelihood of completion of education and training (Corney & du Plessis, 2010). Karallis and Sandelands (2009) found improved knowledge can spark achievement of goals positively affecting performance and self-hood. They reported organization mentoring is a key support provided to young people entering the workforce but also is a major component of a broader process that encompasses achieving work performance objectives.

Two articles discussed the benefits to the individual. Chaudhuri and Ghosh (2012) reported the benefits of reverse mentorship for millennials, those born between 1979 and 1994, and Boomers born between 1946 and 1964. Millennials value harmonization, and organizational acceptance (Chaudhuri & Ghosh, 2012). Boomers gained values from the millennial assisting them with broader viewpoints in multiculturalism, individualism, globalization, and work life balance from their reverse mentoring experiences (Chaudhuri & Ghosh, 2012). Two articles discussed the benefits to the organization. The individuals working for an organization are not the only beneficiaries of mentoring; organizations can also benefit. Karallis and Sandelands (2009) acknowledged individual and organizational benefits when retaining high-potential employees improved moral and increased employee satisfaction.

***Socialization and social support.*** Four articles discussed socialization and social support. In the South African mining case study, Abbott (2010) described how socialization is an issue in diverse

mentoring when the mining community's unwritten social rules (i.e. what levels of seniority socialize together or who sits with who on the bus) differed from the millennial engineering graduates social experiences, thus causing a generational disconnect. A multigenerational workforce will have different needs and value systems, therefore HR professionals should attend to generational differences when trying to maximize mentoring outcomes. Karallis and Sandelands (2009) also discovered that recent graduates benefit socially within the workplace and with career progression when they have access to job related mentoring. This discovery is echoed by Corney and du Plessis (2010), when they cited some common reasons for leaving trade apprenticeship programs in Australia including personal and health-related problems. Corney and du Plessis suggested gender role socialization, stigma related to mental health, finances, lack of transportation, and lack of knowledge of medical care are barriers that male participants faced in acquiring assistance with personal challenges. In contrast, they highlighted the fact that men were more likely to display help seeking behaviors when there was a presence of a supporting social relationship, such as mentorship. Corney and du Plessis found eighty-five percent of apprentices had people they looked to for guidance and support and the majority of these relationships developed naturally, and the participants felt informal supports were very helpful in providing psychosocial support but fell short on career development and professional role modeling.

Through a social exchange theory lens, Chaudhuri and Gosh (2012) focused on engaging older employees in new knowledge and developing a sense of organizational commitment in younger employees. Corney and du Plessis (2010) explained informal mentoring relationships based on social exchange theory, and they found a focus on strength based development will assist in apprenticeship retention. "Social exchanges occur at the organizational level and in didactic one-on-one interactions and may increase Boomers' engagement and Millennial's organizational commitment through specific underlying exchange mechanisms (e.g. perceived organizational support [POS], leader-member exchange [LMX])" (Chaudhuri & Ghosh, 2012, p. 59). Increased social supports and funding are required to enable these informal social exchange mentoring relationships to develop (Corney & du Plessis, 2012).

**Communication and decision-making.** Three articles discussed communication and decision-making. One article was related to perceptions of mentors and mentees. As identified by Abbott (2010), many South African miners spoke Afrikaans rather than English whereas new graduates spoke English, and these language barriers resulted in communication break-down. The generational differences between workers can create communication issues in the workplace and mentoring process. Abbott found mentors were not equipped to handle difficult diversity issues and the mentoring relationships failed as a result. In this study, the HR practitioners expected mentoring to function as an acculturation process and prepare the mentees to communicate with a variety of people in the mining workplace; thus mentors were expected to act as role models and help the mentees adjust to the mining environment by having intensive personal discussions with them instead of discussing technical development issues. Abbott found the mentors expected the mentees to adapt quicker to the workplace and they were unable to cope with the engineering graduate's personal difficulties, whereas the mentees wanted a supportive mentoring environment but lacked training to help them understand their role and make their needs known to their mentors. Consequently, Abbot reported a difference in HR practitioners', mining community mentors'

and engineer graduate mentees' perceptions resulted in a formal mentoring relationship that did not work.

In a study by Karallis and Sandelands (2009), mentees were asked to reflect upon leadership skills that would be most effective to enhance their mentoring relationships with mentors. The objectives of this reflection was to encourage the mentees to think deeply about what is required of them in order for their mentoring relationship to work and to build peer support in order that assumptions could be questioned, workable solutions proposed, and confidence built in the participants. In this study, the mentees considered effective communication, decision making and mutual respect to be key factors in successful mentoring relationship. Another example of the importance of communication in workplace safety and mentoring is described by Kaskatas et al. (2013) in a collaborative research project between the Carpenters District Council of Greater St Louis and Vicinity, the Homebuilders Association of St. Louis and Eastern Missouri and the Carpenters Joint Apprenticeship Program. Kaskatas et al. hypothesized worker safety would improve with foreman training in fall prevention and safety communication. The researchers identified a wide range of fall protection and safety communication training opportunities for foremen working in residential construction. The resultant training curriculum focused on best practices for crew member training, safety communications, and mentorship. They found the training curriculum was well-received among foremen, and there were indicators for improvements in safety behaviors, on-the-job fall protection training, and safety communications among foremen and crew.

***Workforce engagement.*** Two articles discussed workforce engagement. Chaudhuri and Ghosh (2012) made recommendations to increase Boomers' engagement at work include opportunities for individual growth and knowledge expansion making work more appealing. Their suggestions for millennials included enhanced acknowledgements and executive socialization connections that provide employee encouragement are needed to enhance engagement. Despite differences in both generations, Chaudhuri and Ghosh felt it was important to note these two groups support and value reverse mentoring. "Reverse mentoring relationships can help Boomers develop sensitization to issues of workplace diversity, subject matter advances, work-life balance, and global perspective, all of which can contribute to increasing their level of engagement at work" (Chaudhuri & Ghosh, 2012, p. 57). Leveritt (2010) developed a safety engagement model - an action oriented continual improvement process requiring organizational structures and strategies for sustainability. Within the model, a simulator trainer assigned the role of *driver*, utilizes training and mentoring to assist employees with knowledge expansion and decision making capabilities. Kaskutas et al. (2013) supported the idea of safety engagement when the authors describe the activities after fall arrest and safety training sessions; foremen engaged their workers by increased participation in tool box talks, giving appropriate feedback, positive recognition, and daily verbal exchanges emphasizing safety. By focusing on employee safety engagement, organizations and industries may be able to offer workers "more flexibility in work life" (Chaudhuri & Ghosh, 2012, p. 60), which could result in higher compliance with required safety behaviors.

## **Discussion**

Mentoring has lasting benefits, but that formal programs can fail to reflect this outcome. An organization-wide mentoring process needs to balance the needs for uniformity with flexibility, foster accountability, and be refined in the light of practical realities. These authors stated that all mentoring

processes will remain works-in-progress if they will remain relevant to changing business needs. Future considerations from the Abbott (2010) article included the use of external mentors due to the power imbalance of having management as mentors and a need to educate about diversity in the workplace. Chaudhuri and Ghosh (2012) requested the development of HR practices to respond to changing demographics. Karallis and Sandelands (2009) identified next steps including: simplifying and reducing reporting requirements, remaining true to the original principles behind the mentoring process with consistency provided, and HR showing more day to day leadership. Corney and du Plessis (2010) requested more supports and a program to be put in place to strengthen support networks so that more apprentices complete their programs. Preventative measures such as mentorship support may be beneficial, but should be evaluated for fiscal responsibility. Kaskutas, Dale, Lipscomb and Evanoff's (2013) next stage has started with 60 residential foremen, testing the effectiveness of the modified training program. Currently the evidence does not exist for this stage and needs to be evaluated once published. Finally, Leveritt's (2010) workforce engagement model needed research data to provide evidence for validity and reliability.

Abbott (2010) revealed senior management grasped mentoring but not the "softer" issues, and no training was provided for mentors, their delegates, or mentees on their roles, bridging the structural gap between university and the work world, or how to address gaps between gender, age, language, social and racial background; therefore, the lack of mentee training resulted in graduates who did not have a clear understanding of their role in taking responsibility for their career development, and constructive engagement on sensitive issues. Abbott identified a gap existing between the mentorship programs' adopted intent and actions that occurred, thus mentors were not equipped to handle difficult diversity issues and the mentoring relationships failed as a result, and these gaps in perceptions resulted in the miners viewing graduates as a burden, in terms of the time and effort required to integrate and develop their skills.

Chaudhuri and Ghosh (2012) were unable to find sound Human Resource (HR) practices to respond to changing demographic needs and formulated eight propositions yet to be researched related to reverse mentoring with Boomers and Millennials. They identified four Boomer propositions related to organizational support without generational biases and leader member exchange growth opportunities hoping for enhanced engagement outcomes, and four millennial propositions focused on sharing their skill sets in meaningful exchanges devoid of traditional mentoring role hierarchy to gratify networking and recognition needs for intensified organizational dedication. No reverse mentoring program design or evaluation was provided.

Corney and du Plessis (2010) found funding for mentoring was a key issue and lack of programs to support existing relationships with significant others in their workplace was also a gap. They stated there is a lack of data around dyadic relationships in informal mentoring and only focused on the mentee's perspectives. Karallis and Sandelands' (2009) case study and Kaskutas, et al. (2013) pilot project made generalizations difficult, as both had limitations within their groups. Mentors were satisfied to be involved in developing mentees, yet have genuine difficulties in prioritizing and allocating time. There was tension between short term operational delivery and longer term developmental objectives. The

published research by Kaskutas et al. stated future national regulation mandate changes would affect foreman training. The pilot project took place during an economic downturn, so may have crew implications in the future. The outcome effects of the training program need monitoring over a longer period of time (Kaskutas et al.). This pilot project had a limited sample, however a second larger scale research is being conducted. We were unable to find a publication on this second research project. Leveritt (2010) focused on a newly developed non-validated workforce engagement model that incorporated aspects of mentoring. The author believed a poorly developed safety culture, inadequate leadership skills, and rapidly changing workforce all significantly impede workforce engagement outcomes. In addition, he/she stated physical barriers, such as inconvenient office locations and shift work, hindered communication and full implementation of the model.

Despite the minimal publications uncovered, those found provide evidence that mentoring can positively influence safety engagement in industry. A safety engagement model incorporated mentoring and training communication to positively impact decision making at work. Reverse mentoring kept Boomers engaged and Millennials committed to the workforce. Mentored foremen training and engaging communications including safety tool talks provided evidence of mentorship and improved safety behaviors. Valuable information on setting up an organization wide mentoring process enabling mentees to lead, encourage networks, and socialization to assist with enculturation into the organization's values, beliefs, formal, and informal rules was discussed. One publication, although unsuccessful at meeting psychosocial needs referred to as softer issues, had positive outcomes with some male graduates being well integrated when innovative technology was encouraged resulting in high levels of self-worth and job satisfaction. Lastly, information on social networking outside the work environment was beneficial in understanding mentorship and safety engagement.

Given the individual and organizational costs that are incurred with employee injury, it is essential that a comprehensive approach be taken to minimize the occurrence of workplace accidents. As outlined in the preceding paragraphs, there is evidence that mentorship is a framework that can assist in the adoption of workplace safety engagement. While no direct research has been carried out that specifically answers our research question, there is enough evidence in related research and publications to suggest that mentorship and mining safety engagement is a rich field in which there are ample opportunities to conduct research, build and validate conceptual models, and development formal and informal mentoring programs.

**Gaps in the Literature.** An action research project focused on mentorship and safety within the mining industry in a variety of locations should be a priority for human resource departments. Some questions that arose from the literature include: Do mentoring programs help to build generational bridges so the baby boomer and millennium workforce can connect? Further inquiries related to Leveritt's (2010) research are: Does creating a workforce engagement model used to train truck operators increase new employees work performance and efficiency? Has this model been used elsewhere? In what context? Was it effective? Is there a relationship between mine rescue teams with mentorship and safety? Based on the Abbott (2010) case study these questions have been generated: Does a mentoring program ensure a future supply of high-level skilled employees who practice safely? Do other mining

companies experience the same challenges in trying to acculturate new graduates into their workforce?

**Recommendations.** Based on the results of this scoping literature review, recommendations for industry are as follows:

- Human resource departments may provide diversity awareness education.
- Companies may develop a mentorship culture and/or program to offer mentorship to all employees.
- Companies may cultivate a safety communication culture and provide leadership and support.
- Companies may create a valid and reliable measurement tool with action processes that are conducted regularly to evaluate whether current and changing workforce needs are met.
- Companies may conduct a cost benefit analysis to measure the impact of mentoring on workforce engagement and safety prevention outcomes needs to be conducted.

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