Organizational Learning:
How to Learn From Failure and Success

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Abstract

While the organizational learning literature dates back to the 1960s, a new stream of research examining how organizations learn from success or failure has developed over the last 20 years. The purpose of this review is first to organize and integrate the literature on organizational learning from failure and success, and then to identify gaps in the current state of knowledge prompting new directions for future research. To this end, I organize the literature into three streams: learning from direct experience, learning from indirect experience, and learning from extraordinary events. In organizing the literature in this way, several directions for future research became clear including a need to develop our understanding of both the content of the learning that occurs and the role that emotions play in learning processes.

Key words: organizational learning, success, failure, direct learning, indirect learning, experiential, vicarious, learning from rare events

1. Introduction

Research into organizational learning, the process by which organizations adjust their range of behaviors, is crucial for enabling organizations to adapt over time to dynamic environments (Argote and Miron-Spektor, 2011). If organizations aim to have lifespans at least as long as the people who found them, then the ability to adapt is paramount to their survival, as environments are all but guaranteed to change over decades. Because an organization's ability to adapt is so important, research on organizational learning has flourished since its beginnings in the 1960s[1]. As a result, the literature on organizational learning is very broad. It encompasses the antecedents of learning such as search processes, the mechanisms that drive learning including absorptive capacity and recombination of knowledge, and some of the dangers associated with learning processes such as imbalance between exploitation and exploration and competency traps. Given the breadth of topics included within the organizational learning literature, a review of the entire field as a whole is beyond the scope of this essay. Instead, this review will focus on how organizations learn from the failure or success of prior experiences.

Over the course of the near 60 year history of the field, scholars have utilized several definitions of organizational learning (Argote and Miron-Spektor, 2011). In their seminal paper, Cyert and March (1963) define learning as the process by which firms adapt to their environments focusing on adaptation with respect to goals and search behavior. Since then, some scholars have taken a more cognitive perspective defining organizational learning as the process by which causal beliefs are communicated and institutionalized (Weick, 1995). For the purposes of this review, and consistent with many current scholars' definitions, I

[1] Search of Web of Science for article about organizational learning reveals over 500 articles have been published on the topic.

define organizational learning as the process by which organizations shift their behaviors or knowledge based on prior events (Argote and Miron-Spektor, 2011; Bingham and Davis, 2012).

After receiving relatively little attention early in the history of organizational learning, research focused on learning from failure and success has received considerable attention in recent years[2]. Conceptually, success and failure are defined relative to an actor's aspiration levels, which are an actor's *a priori* goals for a task (Cyert and March, 1963; Levitt and March, 1988). Success is defined to be satisfactory outcomes meeting or exceeding an actor's aspirations, and failure is defined to be outcomes below an actor's aspirations. In reviewing this literature, I have identified three distinct streams of research based on the antecedents of learning, all of which fall under the heading of past experiences. The literature on learning has examined learning from three distinct types of experiences: *direct experiences*, *indirect experiences,* and *extraordinary experiences.* Direct experiences refer to learning from an actor's own experiences. Indirect experiences focus on actors learning vicariously from the experiences of other actors, and extraordinary experiences examine learning from things which interrupt actors' standard experiences. For the purposes of this review, I will use the term *actor(s)* to refer generally to any entity engaged in learning in the context of organizations, including organizations themselves, along with teams and individuals.

These streams were identified following a review of articles from prominent management journals examining organizational learning that stemmed from an experience classifiable as a success or failure. While this review comprises articles which are mainly empirical or case studies, I also included often cited theoretical pieces when relevant. I focused on articles

[2] Web of Science search reveals no articles prior to 2000 that focus specifically on learning from success or from failure in top journals. Since 2000 there have been over 100 published.

published since 2000 in the following journals: *Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, Management Science, Organization Science,* and *Strategic Management Journal*. Articles published before 2000 or outside of these journals were included only if they were highly cited and contributed meaningfully to developing our understanding of the process of organizational learning from failure and success.

Lastly, current research acknowledges that organizational learning is fundamentally a multilevel process. Initial studies of organizational learning, however, focused on developing an understanding of the effects of cumulative experience in the tradition of the learning curve (Argote and Epple, 1990; Lieberman, 1984). As a result, these studies tended to focus only on the organization level of analysis. More recently, research has examined the microfoundations of learning. These studies attempt to unpack the black box of learning to understand how the teams and individuals, which comprise organizations, learn from experience. This review synthesizes research across levels of analysis and includes studies of learning from failure and success at the organization level, the team level, and the individual level.

Next, I will present the key empirical findings and the research gaps identified from each stream, and I will conclude the review by providing a brief summary of key insights and future directions for research that emerge from the integration of the three streams. Over the past twenty years there has been a boom in research on organizational learning from failure and success. By presenting the key insights and remaining research gaps both within and across the three streams, I synthesize the current state of knowledge. With this review, I aim to identify several promising pathways for future research on organizational learning from failure and success.

2. Learning From Direct Experience

This stream of the literature examines how actors, including organizations, teams, and individuals, learn directly from their own prior experiences. Organizations prefer this form of learning to learning from indirect experience, which is discussed in Section 3, because organizations have greater access to and trust of information gained from their own experiences (Aranda, Arellano, and Davila, 2016; Schwab, 2007). The research reviewed here on failure- and success-related learning from direct experience evolved from the tradition of learning curve studies, which examine how production efficiency and other processes improved with cumulative experience (Argote, 1999). The studies involved here go beyond the simple identification of learning curves, as they unpack the drivers behind the relationship between feedback about prior direct experiences and performance. This research also examines the processes involved with learning at the macro level of the organization separately from those at the team and individual level, which is appropriate because these processes are distinct. As such, I describe the findings of studies that focus on learning from direct experience at the organization level, before moving on to describe the process of learning from direct experience at the level of the team and the individual.

2.1 Learning From Direct Experience: The Organizational-Level

Research on learning from direct experience at the organizational level has shown that the characteristics of the firm and the nature of the experience itself affect the ability to and quality of organizations' learning. Additionally, researchers have begun to unpack the dynamics of the learning process, examining how the learning process plays out longitudinally.

To begin, two organizational characteristics, structure and culture, have been shown to have strong effects on learning outcomes. Simple organizational structures can enable an organization to better process and learn from challenging experiences because simple structures facilitate easier identification of causal links, especially in stable environments

(Haunschild and Rhee, 2004; Haunschild and Sullivan, 2002). These simple organizational structures also help organizations learn from events with heterogeneous causes. Sorenson (2003) shows that firms with simple organizational structures are better able to learn from direct experience. His study of computer work station manufacturers provides evidence that complex organizational structures and high degrees of interdependence obscure causal linkages between actions and outcomes, interrupt the diffusion of information, and limit an organization's ability to actually implement changes. Each of these effects serves to limit the organization's ability to learn. That being said, in highly volatile environments, more intricate structures can actually enable firms to learn better. More complex structures incorporate more processes inside the firm, and by internalizing more processes, the firm is less affected by the uncertainty of the external environment. In reducing uncertainty, the firm is better able to develop meaningful lessons from its direct experience (Sorenson, 2003). Therefore, the effectiveness of simple organizational structure for learning may be reduced when environmental volatility is high.

Similar to structure, an organization's culture, specifically its attitude towards failure, can act as both a barrier and an aid to learning (Cannon and Edmondson, 2001; Husted and Michailova, 2002; Shepherd, Patzelt, and Wolfe, 2011). First, organizational attitudes towards failure can inhibit learning. In many organizations, there are stigmas associated with failure such as a belief that it signals incompetence (Cannon and Edmondson, 2001). When organizations stigmatize failure, failures go undiscussed and no learning occurs (Husted and Michailova, 2002). However, if organizations normalize failure, then the failures experienced by the organization and its members can provide valuable information from which the organization can learn (Shepherd *et al.*, 2011). In addition to attitudes about failure, the overall level of enthusiasm about knowledge sharing within the organization affects an organization's ability to learn. If the organizational culture promotes hostility towards

knowledge sharing, then information will tend to be hoarded in pockets within the organization and when information is shared it may be rejected by those who are supposed to receive it (Husted and Michailova, 2002). This process leads to low levels of information sharing and, thus, reduced learning by the organization.

Independent of the characteristics of the organization, the nature of a direct experience, its complexity and whether it was a success or failure, affect an organization's learning. As may be expected, it is particularly challenging to learn from direct experience with complicated causes. Learning from such experiences is problematic because additional confounding variables and noise are introduced into the already difficult process of identifying causal relationships. As a result, attempting to learn from these types of experiences is more likely to produce superstitious learning (Muehlfeld, Sahib, and Witteloostuijn, 2012). Superstitious learning is a process in which actors learn from a compelling subjective experience, but fail to correctly identify the relationship between actions and outcomes (Levitt and March, 1988). However, surprisingly, research shows that direct experience of an event with complicated causes stimulates deep analysis, and thus, these events can actually produce valuable insights (Haunschild and Sullivan, 2002; Stan and Vermeulen, 2013). Stan and Vermeulen (2013) examined fertility clinics, and showed that learning from direct experiences with complicated causes actually led organizations to outperform their peers who had only learned from simpler experiences.

As for whether the experience was a success or a failure, organizations are able to learn from either. However, in order to be motivated to learn, organizational performance needs to deviate from aspiration levels, which is to say it needs to be considered a success or failure (Aranda *et al.*, 2016; Baum and Dahlin, 2007). As such, the effectiveness of an organization's learning efforts is moderated by its prior performance relative to its aspiration levels. In a study of railroad companies' aspiration levels, Baum and Dahlin (2007) revealed that small

successes or failures, relative to large ones, make learning from direct experience more effective.

While firms can learn from both success and failure, the processes associated with each are distinct. Direct experiences with success can promote learning, but success has also been shown to cause problems in long run. Firms learn from their initial successes but experience diminishing returns. Because success promotes the economizing of scarce resources by focusing only on what has proven to work, each subsequent success experiences produces fewer learnings than those that preceded it (Muehlfeld *et al.*, 2012). Additionally, organizations have a tendency to be overconfident in their ability to successfully execute complex tasks (Ahuja and Katila, 2001; Levinthal and March, 1993). High levels of direct success experience exacerbate issues related to overconfidence, leading to inertia and excessive risk-taking (Baumard and Starbuck, 2005; Muehlfeld *et al.*, 2012). For example, as decision makers experience more and more direct success, they become unrealistically confident in their own ability to create success (Muehlfeld *et al.*, 2012). Even if decision makers do not become overconfident, experiencing success at the wrong time can lead an organization to narrow its focus too soon. The early experience of success inhibits the development of valuable exploratory competences (Madsen and Desai, 2010; Rhee and Kim, 2015). In a simulation, Rhee and Kim (2015) demonstrate that firms which experience early success begin to focus immediately on refining and optimizing, thus ignoring the opportunity to develop their capability to explore. Low levels of exploration are a double-edged sword as they also inhibit the ability of the organization to exploit existing routines and knowledge stores (Katila and Ahuja, 2002). Over time the inability to explore leads to higher risk of organizational failures and decreased profitability (Rhee and Kim, 2015).

Organizations are also able to learn from direct experience with failure. Similar to success, an organization's initial failure experience can be detrimental, but the mechanism for

this effect is different. Whereas early success can stunt a firm's ability to explore, initial failure experiences are likely to produce superstitious learning because firms struggle to process early failures and fail to accurately identify the causal pathways that lead to said failures (Baum and Dahlin, 2007; Muehlfeld *et al.*, 2012). Furthermore, small direct experiences with failure also may lead to an increase in experimentation producing more failures (Khanna, Guler, and Nerkar, 2016).

Despite the challenges associated with early failures, continued direct exposure to failure pushes organizations to reevaluate their processes, institute changes, and improve performance (Khanna *et al.*, 2016; Muehlfeld *et al.*, 2012). In a study examining innovation at large pharmaceutical companies, Khanna and colleagues (2016) demonstrated that frequent direct experiences with failure early in the research process lead pharmaceutical companies to improve the quality of the innovative output. More frequent failure enables firms to generate more accurate knowledge of causal pathways. Fast failures generate better feedback as their immediacy makes the feedback less ambiguous. Additionally, failures occurring early in the R&D process may have less commitment and investment behind them, increasing likelihood that the firm chooses to learn from them as opposed to ignoring them. The act of voluntarily choosing to learn from direct experience with failure has been shown to improve the firm's ability to learn over cases when such learning is imposed by external parties (Haunschild and Rhee, 2004). When learning is forced as opposed to voluntary, organization members view the imposed changes as a threat, and they become resistant to learning efforts.

With respect to size of the direct experience with failure, there is debate on whether larger or smaller failures are more beneficial. On one hand, firms can ignore small failures (Madsen and Desai, 2010). Furthermore, organization members exhibit the tendency to redefine small failures as successes, and thus ignore them as opportunities for learning (Dillon and Tinsley, 2008). On the other hand, large failures generally unfold over a long period of time and have

complex causes. As a result, firms can attribute these large failures to external factors unrelated to their internal processes, thereby failing to learn (Baumard and Starbuck, 2005).

Once it was clear that the processes associated with learning from failure and learning from success were different, research begun to directly compare the effectiveness of learning from the two outcomes. Here, research demonstrates that firms learn more from failure than success, and that failure knowledge depreciates slower (Madsen and Desai, 2010). Firms learn more from failure because it is more salient than success, and this increased salience attracts more attention from top managers (Li *et al.*, 2013; Muehlfeld *et al.*, 2012; Sitkin, 1992). The increased attention by top managers, coupled with the fact that failure tends to reveal weaknesses in existing processes, makes firms more likely to codify, or explicitly record, the knowledge gained from failure. On the other hand, because knowledge gained from success tends to refine existing organizational routines, this knowledge tends to remain uncodified, retained only in the minds of organizational members (Madsen and Desai, 2010). As a result, success knowledge is forgotten quicker.

Finally, when organizations learn from prior direct experience they do not do so in isolation. Rather, learning is a process that occurs over time. As organizations experience more things, prior direct experiences interact in complex ways. Studies show that while organizations do learn to change their behavior, they also exhibit momentum (Baum, Li, and Usher, 2000; Chuang and Baum, 2003). Specifically, if they have experience executing a particular set of behaviors, they will tend to continue to do these in the face of negative feedback. For instance, retail chains that have direct experience with a particular naming strategy will continue to use that strategy even when some of the stores that are using that strategy fail (Chuang and Baum, 2003). In addition to events interacting with other similar events, failure interacts with its opposite, success. Success on its own leads organizations to become overconfident in their ability to generate successes and to lack awareness of the

limits of their existing knowledge, increasing the likelihood that they fail (Baumard and Starbuck, 2005). However, experiencing failure with success can mitigate this issue. In their study of the orbital launch industry, Madsen and Desai (2010) show that experiencing failure, in addition to early success, helps organizations identify the boundaries of their existing knowledge by forcing them to reevaluate their assumptions. While this research demonstrates the effects resulting from the interaction between success and failure, organizations are not in complete control of whether they experience success or failure. Furthermore, organizations invest a great deal of energy and resources into avoiding failure. Therefore, future research should examine what other strategies organizations can use to manage the limitations associated with learning from success.

2.2 Learning From Direct Experience: the Microfoundations

Research also recognizes that organizations are only able to learn to the extent that the teams and individuals who comprise the organization also learn. Furthermore, examining the microfoundations of learning has revealed insights into the learning process that were absent at the organization-level. Research at the micro level has focused on factors that affect team and individual level learning from direct experience along with identifying the mechanisms involved in implementing the lessons that have been learned.

In previous studies addressing learning from direct experience at the organizational level, learning was treated as an entirely rational behavior enacted by the organization. However, it is well known that humans as decision makers do not always behave in entirely rational ways (Kahneman and Tversky, 2012). When considering learning at the level of the individual,

studies have revealed that psychological factors, namely emotions and correspondence bias[3], play a fundamental role in determining what people learn.

Studies examining the role of emotions have focused on learning from failure. In response to failure individuals tend to feel negative emotions, and negative emotions, such as sadness, inhibit an individual's ability to learn by interfering with their ability to process information (Shepherd *et al.*, 2011). That being said, failure can elicit many different types of negative emotions in addition to grief. Certain emotional responses impair people's ability to learn more than others. In particular, while failure can elicit both guilt and shame, individuals feeling guilt are more likely to learn from their failures than those feeling shame (Bohns and Flynn, 2012). Guilt is more constructive than shame because guilty individuals are more likely to seek atonement and work with their peers, whereas shameful individuals tend to withdraw from their work and lash out (Bohns and Flynn, 2012).

Furthermore, individuals cope with negative emotional responses to failure in different ways. Certain types of coping mechanism result in more effective learning. Specifically, alternating between loss orientation (when an individual faces the failure and attempts to process it) and restoration orientation (when an individual avoids the failure and is proactive about addressing other stresses) can be particularly beneficial in promoting learning from a direct experience of failure (Shepherd *et al.*, 2011). Loss orientation improves learning by enabling an individual to engage directly with failure and process the information provided by the failure. However, by making the failure more salient, loss orientation can lead to even greater negative emotions. In order to cope with these negative emotions, an individual can

[3] Correspondence bias refers to the tendency of individuals to over attribute successes to internal factors and failures to external factors when considering their own behavior, but when considering the behavior of others the attribution flips such that individuals attribute other's successes to external factors and their failures to internal ones (Gilbert and Malone, 1995). This phenomenon is also referred to as the fundamental attribution error (Ross, 1977).

turn to a restoration orientation. By alternating between the two, an individual maximizes their ability to learn from failure and minimize their feelings of negative emotions (Shepherd *et al.*, 2011).

Even if people are able to perfectly regulate their emotions, another psychological factor, correspondence bias, could interfere with learning. As a result of correspondence bias, individuals, unlike organizations, learn a lot from their own successes, but struggle to learn from their own failures. In fact, one study demonstrated that individuals often actually perform worse after a direct experience of failure, demonstrating not just an inability to learn positively from their own failure but a tendency to learn negatively (KC, Staats, and Gino, 2013). Yet, directly experiencing prior success reduces and eventually eliminates the negative effects of direct experiences with failure.

Moving one-level of analysis higher, research has also shown that fixed team-level characteristics, like diversity and autonomy, are important for learning from direct experience (Edmondson, 1999; McGrath, 2001; Nadolska and Barkema, 2014). In a study of top management team decision making, Nadolska and Barkema (2014) demonstrate that higher levels of diversity in tenure and educational background facilitate more effective learning. Diversity in experience within the top management team promotes increased information exchange and integration among team members. Diversity increases the variety of perspectives expressed thereby making analysis more effective. Thus, diverse teams tend to learn more from a given level of direct experience than homogenous teams. That being said, while homogenous teams may not make higher quality decisions, they make faster decisions because they discuss and analyze information less than their diverse counterparts (Nadolska and Barkema, 2014). When it comes to autonomy, high levels of independence with respect to supervision and setting goals can facilitate learning in certain settings (McGrath, 2001). Specifically, in a study of project teams of large companies, having high levels of goal and

supervision autonomy was associated with more effective learning in exploratory settings. However, having less goal and supervision autonomy was more effective for learning how to refine existing knowledge. Together this research demonstrates the importance of being mindful when designing teams. If organizations are careful when selecting team members and implementing rules governing a team's behavior, they can improve the effectiveness of their learning efforts.

In addition to fixed team characteristics like diversity, more variable emergent team-level constructs also drive learning. Specifically, team psychological safety, defined to be a shared belief within a team that interpersonal risk-taking will be free from negative consequences, has also been shown to improve a team's ability to learn from direct experience (Edmondson, 1999). Team psychological safety promotes learning behavior by making others comfortable addressing mistakes and misunderstandings, thereby increasing a team's ability to identify learning opportunities and thus their ability to learn.

Research evolving from studies on emergent team-characteristics led to investigations about the learning process, moving away from prior studies which focused entirely on effects and outcomes. Empirical research in this area describes how teams effectively implement lessons learned from prior direct experience (Edmondson, Bohmer, and Pisano, 2001; Tucker, Nembhard, and Edmondson, 2007). In a qualitative study of hospital teams learning about a new surgical tool, Edmondson and her colleagues (2001) found that, in order to successfully implement changes, teams need to do several things. First and foremost, they have to motivate their members to engage in learning. They must also ensure they practice communicating and sharing information amongst themselves. Finally, they must engage in reflection to build a shared understanding of their activities. Another study, involving hospital teams in intensive care units, confirms the importance of motivation in successfully implementing organizational changes (Tucker *et al.,* 2007). This study also demonstrates a

need for teams to engage in developing an understanding of how to adapt the changes being implemented to the specific context of their teams.

More recently, the effect of politics on individual decision-making has been emphasized (Ganz, 2018). Prior research has demonstrated that politics can interfere with learning. Studies discuss how individual's political considerations may lead them to restrict information flows or ignore prior experiences entirely to accomplish private goals (Baumard and Starbuck, 2005; Edmondson, 2002; Eisenhardt and Bourgeois, 1988). Additionally, learning can be inhibited when political actors hijack the changes that occur following a success or failure to solidify their political position as opposed to implementing changes oriented towards improving performance (Henderson and Stern, 2004; Muehlfeld *et al.*, 2012). Ganz (2018) goes a step further, proposing a theory in which learning is dominated by politics. Utilizing a formal model, he demonstrates how a political model can explain why organizations so often do not conduct learning activities before a change, what he terms ignorant decision-making, as well as why they so often conduct learning activities only to not implement any changes, what he terms educated inertia. In essence, organizations forgo seeking new knowledge when leaders do not need to learn in order to build consensus to implement changes. However, organizations will develop additional knowledge, but choose not to implement any changes if leaders are unable to build consensus without learning.

2.3 Learning From Direct Experience: Summary

In reviewing research on organizational learning from success and failure, learning from direct experience appears to be the largest and most developed stream of the literature. Research on learning from direct experience has proliferated with many empirical studies on the subject, perhaps because learning from direct experience is the most common form of organizational learning. At the organizational level, studies have revealed that the structure and culture of an organization affect its ability to learn. When the external environment is

stable, simple structures enable organizations to better process info and learn (Haunschild and Rhee, 2004; Haunschild and Sullivan, 2002; Sorenson, 2003), but when the environment becomes volatile, complex structures confer learning advantages by shielding the organization from environmental uncertainty (Sorenson, 2003). Additionally, having a firm culture that normalizes failure and encourages knowledge sharing facilitates organizational learning from direct experience (Cannon and Edmondson, 2001; Husted and Michailova, 2002; Shepherd *et al.*, 2011). This research shows that, at the most macro level, the characteristics of an organization have an effect on learning. Organizations may therefore reap learning benefits from being strategic when designing these features.

Organization-level studies also demonstrated that firms are able to learn from both success and failure, but revealed that the two experiences are distinct. When it comes to success, firms learn how to refine and optimize their routines; however, with failure, firms learn to reevaluate existing assumptions and explore alternatives (Madsen and Desai, 2010; Muehlfeld *et al.*, 2012). While success and failure present opportunities to learn, firms struggle with learning from each. Success can lead to overconfidence and rigidity, and failure is likely to produce superstitious learning. Furthermore, early experiences with either by themselves are particularly detrimental (Baum and Dahlin, 2007; Rhee and Kim, 2015). Finally, overall research shows that, despite being able to learn from both success and failure, organizations are more effective learners from failure (Madsen and Desai, 2010).

While learning from direct experience at the organization level appeared to unfold in a methodical manner, the micro perspective revealed more turbulence in the learning process. Negative emotions that arise in response to failure impair an individual's ability to learn from direct experience, with some emotions having a more negative impact than others (Bohns and Flynn, 2012; Shepherd *et al.*, 2011), but coping strategies can reduce this negative effect and promote learning (Shepherd *et al.*, 2011). Another factor which complicates the learning

process is correspondence bias, which leads individuals to struggle to learn from their own failures due to a tendency to blame their failures on external factors (KC *et al.*, 2013).

At the team-level, several attributes, specifically diversity, psychological safety, and autonomy, have been shown to improve the effectiveness of a team's learning efforts (Edmondson, 1999; McGrath, 2001; Nadolska and Barkema, 2014). Research at the team-level reveals that while many teams understand the need to learn, many issues can obstruct efficient learning processes. For example, teams may struggle to develop efficient routines at sharing information or team members may simple feel uncomfortable speaking up in the group setting.

Finally, recent work at the micro level has only just begun rigorous theory development around the role of politics (Ganz, 2018), despite early works alluding to its importance (Baumard and Starbuck, 2005; Edmondson, 2002; Eisenhardt and Bourgeois, 1988; Henderson and Stern, 2004). The work on examining the specific effects of political action within organizations on the ability to learn at the organization, team, and individual levels is still entirely theoretical and would benefit from the addition of empirical theory-testing research.

2.4 Learning From Direct Experience: Future Directions

Overall research on organizational learning from direct experience has progressed greatly in the last twenty years. However, some substantial gaps in this research stream still exist. First, current research has given little attention to how the multilevel process of learning from direct experience is integrated across levels. No studies have developed a framework for how organizational learning from direct experience occurs from the bottom-up. That is to say, research in this area does not currently provide a theoretical framework for how the learning processes that guide learning from direct experience at the individual and team level translate into the learning processes that have been observed at the organization level. Theoretical

work that advances such a framework is much needed, especially because this review has unveiled that while much of the research on learning across different levels of analysis is consistent, there exist tensions between our understanding of learning at the organization-level and the microfoundations of learning.

Specifically, despite research greatly advancing our understanding of macro-level and micro-level learning processes, contradictory findings have emerged across levels of analysis, and scant research has been devoted to resolving these contradictions. As such, resolving these tensions is an area ripe for future research. For example, research at the organization level has shown that firms learn more from their own failure than their own success (Madsen and Desai, 2010), but at the individual level, research demonstrates that individuals learn more from their own successes than they do from their failures (KC *et al.*, 2013). Again, future research that develops a framework resolving these contradictory findings is needed.

Additionally, while existing studies suggest that politics have an effect on learning (Baumard and Starbuck, 2005; Henderson and Stern, 2004; Muehlfeld *et al.*, 2012), research on the effects of politics on organizational learning processes is still in its infancy. The formal model of Ganz (2018) shows that politics can have a profound impact on the learning activities in which organizations engage. Empirical work testing the implications of the formal model is warranted. Furthermore, it would be very informative to understand how political action and power moderate the existing processes described for learning from direct experience with success and failure.

Due to early works ignoring learning from failure, recent literature on learning from direct experience has focused intensely on learning from failure. Studies have examined how various aspects of failure such as its timing, magnitude, complexity, and frequency affect learning outcomes (Haunschild and Sullivan, 2002; Khanna *et al.*, 2016; Madsen and Desai, 2010; Stan and Vermeulen, 2013). While this heavy focus on learning from failure has

produced advances in our understanding, it has come at the expense of knowledge about learning from success, evidenced by a relative lack of studies on the subject. That being said, there are a few studies that examine the effects of success timing and frequency (KC *et al.*, 2013; Madsen and Desai, 2010; Muehlfeld *et al.*, 2012; Rhee and Kim, 2015). However, research into how other aspects of success such as the magnitude of success and the complexity of success affect learning outcomes would be valuable. This is especially true given that research on learning from direct success demonstrates that while success is often self-reinforcing, early success and too much success can be detrimental (Muehlfeld *et al.*, 2012; Rhee and Kim, 2015). Research exploring how the characteristics of success affect learning would advance our understanding of how firms can leverage the advantages of success experience while minimizing its potential for harm.

Lastly, research on learning from direct experience has demonstrated the dangers to learning from both direct experience with success and failure (Baumard and Starbuck, 2005; Muehlfeld *et al.*, 2012). Learning from direct experience with failure can be difficult and result in superstitious learning, and over time, learning from direct experience with success can lead firms to become overconfident and increase the likelihood of failure. Research has also highlighted the ability of diversity to mitigate these risks and improve the effectiveness of learning efforts. Future research should examine the mechanism by which diversity improves the ability of an actor to learn. Specifically, research should examine whether the increased level of discussion and information sharing along with the improved analysis conferred by high levels of diversity mitigate the specific dangers of learning from failure and success.

3. Learning From Indirect Experience

In tandem with research on learning from direct experience, studies have also examined learning from a second source of experience: the experience of others. This second stream of

research, learning from indirect experience, focuses on how actors learn vicariously from the experiences of others. This type of learning operates distinctly from learning from direct experience for several reasons. First, indirect experiences tend to be less salient than direct experiences. Second, focal actors tend to have less information about indirect experiences than those which they experience themselves. Finally, actors must proactively seek out indirect experiences, whereas they will automatically have their direct experiences at their disposal. The findings in this stream are split into the organization-level and the microfoundations concluding with a brief consideration of integrations across levels of analysis.

3.1 Learning From Indirect Experience: the Organization-Level

To begin, research on organizations learning from indirect experience examined whether and why one organization learns from the experiences of another. Research has clearly demonstrated that one organization's experience with another's successes and failures improve the performance of the focal organization (Baum *et al.*, 2000; Madsen and Desai, 2010; Schwab, 2007). Other organization's successes can be used as indicators of where future opportunities may lie and their failures as areas to avoid (Katila and Chen, 2008). However, similar to learning from direct experience, learning from indirect experience is easier when learning from another's failures rather than another's successes (Madsen and Desai, 2010). In the case of indirect learning, the differential in organizational ability to learn from failure relative to success is primarily driven by the fact that information about failures is more accessible than information about success. In addition, organizations can utilize indirect experience of others' failures to identify previously unknown possibilities. For example, medical device firms were able to use other firm's failures to learn from events that would not happen with their own products and develop new ways of seeing adverse events (Maslach *et al.*, 2018). The learning from indirect experience can be both mimetic and

nonmimetic, in that observing other organizations can increase or decrease the prevalence of certain behaviors at the focal firm (Srinivasan, Haunschild, and Grewal, 2007; Yiu, Xu, and Wan, 2014).

Knowing that organizations do engage in learning from other organizations, research has also looked at who organizations look to when they seek to learn indirectly as well as how the type of chosen referent affects learning outcomes. Organizations learn from both organizations of the same type as well as organizations of different types (Kim and Miner, 2007; Srinivasan *et al.*, 2007). Specifically, organizations in one population can learn from other populations, as a study of commercial banks learning from thrifts demonstrates (Kim and Miner, 2007). When selecting a referent from which to learn, organizations rely on cues, such as the prominence of other organizations and similarity in status level between the observed and focal organization. (Yiu *et al.*, 2014). Research has also demonstrated that organizations choose more successful and more similarly sized organizations as referents (Srinivasan *et al.*, 2007). Furthermore, in their study of high-tech camera companies, Srinivasan and colleagues (2007) demonstrated that the type of firm selected as a referent affects whether the learning that occurs is mimetic or nonmimetic. Specifically, firms imitate their similarly sized peers, but they are deterred from conducting the behaviors of more successful firms. Overall, research shows that organizations prefer objectively high quality and more similar others as referents, with the nature of the referent determining whether organizations learn to mimic or avoid other's behaviors.

Given that organizations tend to prefer learning from direct experience due to its salience and the relative prominence of information, research has also examined when organizations choose to learn indirectly. Organizations tend to engage in indirect learning early in their lifespan because they have little direct experience from which to learn (Aranda *et al.*, 2016; Bingham and Davis, 2012). Furthermore, organizations utilize indirect learning techniques

when the experiences of others are particularly salient and when there is greater information about relevant others, their actions, and the resultant outcomes (Kalnins, Swaminathan, and Mitchell, 2006; Kim and Miner, 2007; Schwab, 2007; Yang, Li, and Delios, 2015). For example, research has shown commercial banks learn more from other commercial banks than from thrifts because the similarity of other banks made them more salient (Kim and Miner, 2007). Additionally, market events that release information to the public, such as business failures and ownership changes, promote learning from indirect experience because they provide observing organizations with the rich information necessary for learning (Kalnins *et al.*, 2006; Kim and Miner, 2007). Having network ties to another organization improves learning from indirect experience as it facilitates greater information transfer (Yang *et al.*, 2015). Here, it is clear indirect learning is preferable when direct learning is not an option due to lack of experience or when organizations are aware of and have significant access to information about others' experiences.

A study of railroad companies indicated that organizations also tend to rely on indirect learning from experience when their performance is far from their aspiration levels (Baum and Dahlin, 2007). The study examined performance in the context of accident costs, showing that when a railroad company's current accident costs were far above or far below its prior period's accident costs or the average accident costs of its peers, the railroad company would focus effort on learning from the experiences of others. The authors argue that this is because when either drastically outperforming or underperforming its aspiration levels, an organization will turn to distant search in order to continue to improve performance.

Because learning from indirect and direct experience often occur together in organizations, some studies examine how these two processes interact at the organizational level. At the organizational level, it appears that indirect and direct learning from experience

have a substitutional effect, meaning that learning from the combination of indirect and direct experience is less effective than the effects of each independently (Aranda *et al.*, 2016; Schwab, 2007). In a study on baseball organizations learning how to implement an innovative strategy, Schwab (2007) shows that organizations learn less when combining indirect and direct learning, especially when internal and external information are providing the same lessons. It is suggested the substitutional effect arises because organizations combine information from different sources but have a preference for internally generated information. Lending credence to this mechanism, indirect learning is often supplanted by direct learning as an organization accumulates direct experience (Aranda *et al.*, 2016). However, in contrast to the claims that indirect and direct learning are substitutes, research also shows that indirect learning can contextualize the knowledge gained from direct learning increasing its value (Chuang and Baum, 2003). Their study of chain nursing homes showed that the performance of other organizations using the same strategy as the focal organization helped the focal organization learn whether their direct experiences with failure were idiosyncratic or not.

3.2 Learning From Indirect Experience: the Microfoundations

At the micro-level, it is well known that individuals learn a lot from indirect experiences. Indeed, research suggests that learning from indirect experience at the individual level can be more effective than direct learning (Riedl and Seidel, 2018). That being said, studies of indirect learning have demonstrated contradictory findings regarding the ability of individuals to learn from others' successes and failures. In a study of doctors performing heart surgery, KC and colleagues (2013) show that individuals learn significantly from the failures of others, but that they learn little to nothing from others' successes. In contrast, Riedl and Seidel's study (2018) examining individuals on an e-commerce platform shows

that individuals learn readily from others' successful products[4]. However, they struggle to learn from others' failed products. In fact, they tend to learn to perform worse by observing others' failures, in part because they fail to correctly identify said products as failures. The inability to successfully infer the quality of others' outputs inhibits learning from failure because it interferes with the ability to learn error identification and correction strategies. Having additional experience with others' successes improves people's ability to learn from failure, suggesting that being able to observe a clear signal of success may help with correctly inferring failure. Therefore, it appears that ambiguity in outcomes – where it is unclear whether something was a success or failure – is a significant moderator of the ability of individuals to learn from indirect experience. Future research into learning from indirect success and failure experience is needed to explain these contradictory findings and the moderating role of outcome ambiguity.

Learning from indirect experience also interacts with learning from direct experience at the individual level, albeit in a different way than at the organizational level. Specifically, at the individual level, evidence suggests that learning from indirect and direct experience are complementary (Hoover, Giambatista, and Belkin, 2012; KC *et al.*, 2013; Riedl and Seidel, 2018). Overall learning from indirect experience, increases the effectiveness from learning from direct experience, evidenced by the fact that observing and evaluating others' work improves the effectiveness of learning from one's own completed work (Riedl and Seidel, 2018). Additionally, learning indirectly from someone else's failures enables individuals to overcome their inability to learn from their own failures (KC *et al.*, 2013). Thus, learning

[4] Product quality was determined via contests. The winner of a contest was easily identifiable as successful indicating high-quality products. However, given there is only one winner, there exists significant heterogeneity amongst the losers of a contest. Products that just barely lost the contest may still be of high quality representing additional successful designs, whereas other products that lost are failed designs of truly low quality.

from others can enable individuals to overcome some of the hurdles associated with learning from their own experiences. Additional evidence of a complementary effect comes from a laboratory study which showed that preempting direct learning with indirect learning through observation can enhance the ability of both individuals and groups to later learn from direct experience (Hoover *et al.*, 2012). This complementary effect at the individual level is directly opposite the substitutionary effect observed at the organization level. Future research is needed to reconcile the differences in interactions between learning from indirect and direct experience across levels of analysis.

3.3 Learning From Indirect Experience: Summary

Research at the level of the organization revealed that organizations learn from both others' successes and failures. Similar to direct learning at the organizational level, organizations learn more from indirect experience with failure than with success because there is greater availability of information following from another organization's failure than its success (Madsen and Desai, 2010). While successes may produce publicity, organizations tend to be highly protective of their knowledge of what led to success (Katila, Rosenberger, and Eisenhardt, 2008; Madsen and Desai, 2010).

When it comes to who organizations look to for learning, research shows organizations are particular in selecting referent others, preferring those who are similar in terms of their size, status, and operations as well as the more prominent and more successful organizations in their industry (Kim and Miner, 2007; Srinivasan *et al.*, 2007; Yiu *et al.*, 2014). Furthermore, the nature of referent others affects what the organization learns from them, with organizations learning to mimic the behaviors of firms that are similar to them and to avoid the behaviors of more prominent firms (Srinivasan *et al.*, 2007; Yiu *et al.*, 2014).

Despite organizations' tendency to prioritize learning from direct experience, certain factors can induce organizations to engage in indirect learning. Organizations rely on indirect

learning when they are young and lack direct experience (Aranda *et al.*, 2016). Additionally, greater salience and increased visibility of others' experiences along with greater access to and higher quality information about others' experiences increase the amount of indirect learning carried out by the focal organization (Baum *et al.*, 2000; Kalnins *et al.*, 2006; Kim and Miner, 2007; Yang *et al.*, 2015). The performance of the organization relative to its own past performance and the performance of its peers also affects how much an organization will learn from indirect experience (Baum and Dahlin, 2007). Furthermore, given that learning from indirect and direct experiences often occur at the same time within the organization, research has begun to examine how these two processes interact (Aranda *et al.*, 2016; Chuang and Baum, 2003; Schwab, 2007).

As for research on indirect learning at the individual level, studies in this stream show that individuals rely heavily on indirect learning. There is a debate when it comes to an individual's ability to learn from others' successes, with one study demonstrating that individuals struggle to learn from another's failure but are effective at learning from another's success (Riedl and Seidel, 2018). Yet, another study indicates the opposite –that individuals find it difficult to learn from another's success but learn readily from their failure (KC *et al.*, 2013). Additionally, research shows that at the individual level learning processes tend to be complementary processes (Hoover *et al.*, 2012; KC *et al.*, 2013; Riedl and Seidel, 2018). This finding at the micro level is in conflict with the finding at the organization level that the two processes are substitutionary. These contradictory findings highlight the need for future multilevel research.

3.4 Learning From Indirect Experience: Future Directions

While there are several studies that have begun to examine the interaction between indirect and direct learning, there is still a great deal to be explored. Research examining the interdependence of indirect and direct learning has produced several contradictory findings.

First, at the organization level, while some research has indicated that indirect learning acts as a substitute for direct learning (Aranda *et al.*, 2016; Schwab, 2007), other research has indicated that indirect learning can provide valuable information that helps an organization interpret direct experiences (Chuang and Baum, 2003). Despite Schwab (2007) finding that indirect and direct learning are substitutes, he hypothesized that they could be complements. Future research examining how indirect and direct learning interact at the organizational level is needed. Perhaps indirect and direct learning could be complements at the organizational level in that indirect learning coupled with direct learning can generate insights above what either by itself could. However, organizational processes which favor direct learning, such as a bias towards the salience of direct experience, lead organizations to ignore indirect learning despite its being a valuable source of learning. If this were the case, future research should examine how organizations can overcome these biases in order to reap the full benefits of learning.

Two additional sets of contradictory findings emerged from my review of the literature. First, research across different levels of analysis has revealed conflicting findings with respect to learning from indirect experience. In contrast to some research at the organization-level that suggests a substitutional effect between indirect and direct learning, research at the individual level provides evidence for a complementary effect (Hoover *et al.*, 2012; KC *et al.*, 2013; Riedl and Seidel, 2018). Future research should examine the cross-level relationship between the two to determine what could cause organizations to gain less from the combination of indirect and direct learning than individuals do.

Second future research is also needed to resolve the inconsistent findings regarding the ability of individuals to learn from indirect experience with failure and success. One line of research suggests that individuals do not learn anything from observing other's successes, but they do learn from observing other's failures (KC *et al.*, 2013). In contrast, another line of

research says they only learn from observing other's successes while learning from other's failures leads to decreased performance (Riedl and Seidel, 2018). Future research is needed to address these contradictory findings. The above work has identified that ambiguity in outcomes, where it is unclear whether an experience was a success or failure, is one factor that inhibits an individual's ability to learn from indirect experience failure. Future work should examine how other features of failure may enhance or inhibit learning from indirect experience at the individual level. Furthermore, future work is needed to explore how the features of success, such as the magnitude, frequency, and visibility of the success affect an individual's ability to effectively extract lessons from experience with other's successes.

Future research should also continue to explore how both learning from indirect and direct experience of success and failure interact. Existing research has shown that there is a complex interaction between the four types of learning experiences. Indirect experience with other's successes can better enable individuals to learn from indirect exposure to other's failures (Riedl and Seidel, 2018). Additionally, indirect learning from other's failures can enable individuals to better learn from their own failures (KC *et al.*, 2013). However, we still do not understand the extent of the relationships and interdependencies between these various types of learning experiences. In their study of doctors performing heart surgeries, successes, where patients survived surgery, were relatively common events. I posit that if successes were instead large uncommon events, individuals would continue to infer that other's successes were externally caused. However, due to the salience of the events, it may cause individuals to interpret their own successes as more externally caused reducing their ability to learn from them. There is ample room for future work on how indirect experience with failure and success interacts with direct experience with failure and success.

4. Learning From Extraordinary Experiences

More recently, an emerging stream of research has developed around the process of learning from, what I term, extraordinary experiences. I define extraordinary experiences to be those which fall outside the typical experiences of an actor, and I identified three categories of such experiences: disasters, organizational crises, and rare strategic decisions. Disasters, crises, and rare strategic decisions are each extraordinary experiences in that they are uniquely distinct from the typical experiences of an actor and therefore trigger distinct learning processes.

Extraordinary experiences are different from the other types of events that were examined in the streams on learning from direct and indirect experience for three reasons: their salience, rarity, and idiosyncratic nature. Specifically, these types of experiences tend to be more salient than other experiences for two reasons. One, they can be highly unexpected, such as in the case of crises and disasters, or two, they have an outsized significance, such as with rare strategic decisions (Christianson *et al.*, 2009; Madsen, 2008; Shepherd, 2003). Furthermore, extraordinary experiences are incredibly rare, occurring in isolation, and, as a result, actors often view them as random reducing their motivation to learn (Starbuck, 2009). Finally, these experiences are highly idiosyncratic, more so than other types of experiences, making them especially difficult experiences from which to extract generalizable knowledge (Oh and Oetzel, 2017; Starbuck, 2009). In spite of the tendency of extraordinary experiences to inhibit actors' ability to learn and the inherent difficulty in learning from them, they can be highly profitable experiences if organizations can extract meaningful lessons from them.

In reviewing the literature on organizational learning from failure and success, there appeared several studies that examined how organizations learn from extraordinary experiences. Increasing interest in this stream began in 2009, when there was an issue of Organization Science dedicated entirely to learning from rare events. Overall, research on learning from extraordinary experiences can be broken down into three categories. In one,

studies focus on learning from largely unexpected disasters such as building collapses or workplace deaths (Christianson *et al.*, 2009; Madsen, 2008). In another, research has examined how actors learn from organizational crises, such as near failure events and product line failures (Henderson and Stern, 2004; Kim, Kim, and Miner, 2009). Finally, a third stream of research examines how actors learn from rare strategic decisions such as recovering from a business failure (Shepherd, 2003).

4.1 Learning From Extraordinary Experiences: Disasters

Disasters represent a type of extraordinary event because they are unexpected for the organization. These sorts of events, such as building collapses or violent conflict in the region in which the organization operates, are unexpected and usually caused exogenously. Following a disaster, organizations have a tendency not to learn because they tend to blame external factors, which provides little motivation (Starbuck, 2009). If they do not blame external factors, organizations have a tendency to simply blame individual members of the organization for the failure, which prevents learning as it prevents the organization from dedicating attention to other more systematic issues (Morris and Moore, 2000; Starbuck, 2009). However, disasters also possess a unique ability to trigger learning behaviors. A case study of a building collapse showed that, due to the extreme salience of the event, a disaster can elicit an evaluation of organizational capabilities, expose weaknesses in the organizations, and reveal aspects of the organization's latent knowledge (Christianson *et al.*, 2009). The study also provides evidence that when their weaknesses are exposed, organizations respond by addressing their issues and restructuring their routines and processes accordingly.

After examining what conditions enable an organization to learn from a disaster, research has explored the effects of learning from disasters. First, disasters act as the spark for large scale changes in the organization. Experiencing a disaster can provide enough of a

shock that the organization reevaluates its identity or what the organization considers to be distinctive, central, and enduring about itself (Christianson *et al.*, 2009). As a result, the organization can modify routines and processes that were previously constrained to conform to its former identity. That being said, learning from disasters is not always so transformative. Studying how organizations learn from exposure to violent conflict demonstrates that knowledge generated from experience with one disaster is highly context-specific and often not applicable to the next disaster (Oh and Oetzel, 2017). These two studies suggest that, while disasters may trigger valuable introspection and learning about organizational capabilities, they provide little insight into how to handle the next disaster due to their uniquely idiosyncratic nature.

Unlike the above-mentioned external disasters, research examining internal disasters, such as workplace deaths, demonstrate that organizations can transfer learning from one disaster to the next. Specifically, in a study of workplace deaths in the mining industry, Madsen (2008) shows organizations learn significantly from direct experience with large-scale disasters, which, in his study, are defined to be incidents that resulted in the death of a miner. Furthermore, the learning from this type of disaster experience depreciated very slowly relative to that from minor accidents where no deaths occurred. It is suggested this difference in effects is due to the fact that only disaster experience resulted in codification of knowledge, exemplified by actual changes to organizational routines. It is likely that learnings from minor accidents remain stored in the lower levels of the organization, such as in the miner's themselves and are quickly forgotten due to membership turnover.

Other studies examined the actual process by which organizations respond to and learn from disasters. Using the destruction of the space shuttle *Columbia* as an exemplar, Beck and Plowman (2009) developed a framework for how organizations can most effectively learn from a disaster. Organizations favor top-down processing, which can reduce

the ability of the organization to gain the rich understanding of the disaster necessary for learning. A rich experience of a disaster entails experiencing many aspects and interpretations of the event along with many different predictions of the outcomes of the event for the organization. In order to develop this rich experience, organizations need to rely on active participation by middle managers who are ideally positioned to mediate between the strategically oriented top managers and the operationally oriented front-line employees. By integrating the differing perspectives, middle managers could reduce the likelihood that the organization will ignore warnings, normalize that which is not normal, or downplay ambiguous threats (Beck and Plowman, 2009). As a result, more active middle managers who enable the rich experience of disasters increase the effectiveness of learning from said disasters.

Overall, research on disasters shows that disasters are difficult to learn from due to their idiosyncratic nature. The idiosyncrasies of disasters also imply that the learnings from a disaster are often not transferrable to the next (Oh and Oetzel, 2017). However, disasters can trigger significant learning at the organization level, acting as catalysts of major organizational change and prompting the codification of knowledge (Christianson *et al.*, 2009; Madsen, 2008).

4.2 Learning From Extraordinary Experiences: Crises

Organizational crises differ from disasters in that they are largely internal business-related events. Research on crises suggest that an organizational crisis can trigger a couple distinct types of learning depending on whether the crisis had a large or small impact on the organization and whether the crisis was relevant to a broad or narrow set of organizational actors (Lampel, Shamsie, and Shapira, 2009). When crises are relatively large and broad, they lead to reevaluation of organizational capabilities or to the refining of existing

capabilities. When they are relatively small and narrow, they produce only minor and often transitory changes to the organization.

In addition to large and broadly relevant crises producing significant learning, experiencing crises more frequently and receiving input from population level actors also facilitate the ability of the organization to learn from crises. For example, Kim and colleagues (2009) studied American commercial banks over a period of fifteen years. They found that limited experience with recovery from organizational crises, namely a period of near-failure, was harmful for the organization. In experiencing a near-failure event, recovering banks tended to engage in superstitious learning, applying the apparently tried and tested solution to many other future challenges even though the banks had not actually identified any valid lessons. However, increased experience with near-failure and recovery mitigated the negative effects of limited experience. Eventually, at high levels, prior experience with recovery improved future performance. This suggests that, by experiencing several crises, organizations can better learn from each as they identify actual causal links between their actions and outcomes. In addition to frequently experiencing crises, population level actors, such as regulators and trade associations, can improve an organization's ability to learn from a crisis. Population level actors improve learning from crises as they monitor, investigate and communicate information about organizational crises to wide pool of other organizations (Madsen and Desai, 2018). Learning from population level actors following a crisis is likely more desirable from an organizational standpoint, as experiencing crises frequently is likely quite stressful not to mention that there is no guarantee that organization will survive an encounter with a crisis.

Contrary to learning from disasters – where organizations should prioritize experiencing the event richly so as to gather scarce information – when experiencing a crisis, organizations need a different strategy. Rerup (2009) develops a theory emphasizing top-down learning

during crises utilizing a single-case study of a pharmaceutical company in crisis. It is proposed that in order to be able to learn from crises, organizations need to manage their distributed attention using the top-down process of attentional triangulation. Attentional triangulation involves combining three attentional processes. First, organizations need to encourage attentional stability, the ability to sustain attention to issues that have been identified. Second, attentional vividness, developing complex representations of said issues, must be promoted. Finally, organizations must ensure they have attentional coherence, or similar levels of attention to these issues across various levels of the organization. In doing so, organizations can learn from weak cues and prevent the occurrence of future crises.

Research on crises has indicated that crises can have different effects on organizations depending on their significance and the audience for whom they are relevant (Lampel *et al.*, 2009). Research has also begun to examine what factors influence the ability of an organization to learn from a crisis, such as receiving input from population level actors (Kim *et al.*, 2009; Madsen and Desai, 2018). Additionally, research suggests a top-down approach, centered around the management of the distributed attention of the organization, is beneficial for learning from crises (Rerup, 2009).

4.3 Learning From Extraordinary Experiences: Rare Strategic Decisions

Rare strategic decisions involve organizational events that occur frequently at the population level of organizations, but of which the decision makers of an individual organization experience relatively few. As such, rare strategic decisions include events such as moving on from a failed business, acquisitions, and major changes in firm strategy. Learning from rare strategic decisions is complicated by the fact that rare strategic decisions promote behavior that discourages learning, such as reliance on prior beliefs and the tendency to act overly cautious (Starbuck, 2009). Learning is further complicated because rare strategic decisions, by definition, occur infrequently within the focal organization, and the long time

gap between rare strategic decisions makes it more difficult to learn from them (Hayward, 2002). However, the ability to learn from rare strategic decisions can be highly beneficial, facilitating flexibility and high levels of organizational performance (Starbuck, 1993). In a longitudinal study of a law firm executing several major strategy changes, Starbuck (1993) proposes that organizational decision-makers can learn valuable lessons from rare strategic decisions if they are able to blend their observations with imagined scenarios to generalize from the specifics of the rare decision itself.

Research also shows that superstitious learning, where people's confidence in their abilities grows faster than their actual competence, is common with respect to rare strategic decisions, further demonstrating the difficulties of learning from them. Rare strategic decisions tend to involve complex events whose outcomes are not immediately clear, such as acquiring a company. When results are ambiguous, people tend to interpret them as successes, and so people tend to view rare strategic decisions as successful even when results do not indicate them as such (Anheier, 1999; Sedikides, 1993). Therefore, the inferences people draw from the supposed success are often incorrect resulting in superstitious learning. In such situations, Zollo (2009) demonstrates that efforts to learn from these past experiences actually lead to worse performance, using data on acquisitions by American banks. This kind of superstitious learning is particularly likely when decision makers are inexperienced in making such rare strategic decisions (Haleblian and Finkelstein, 1999). However, learning from rare strategic decisions can be improved with efforts at deliberate learning, explicit knowledge codification, and heterogeneity in experience (Zollo, 2009; Zollo and Singh, 2004).

Research has also examined rare strategic decisions in the context of entrepreneurship. Specifically, studies have examined how entrepreneurs who are choosing to found a new venture learn from prior business failure. Prior research on entrepreneurship has shown that

one of the most robust predictors of entrepreneurial performance is prior experience (Delmar and Shane, 2006; Eesley and Roberts, 2012; Parker, 2013). This result suggests that entrepreneurs are learning something from prior ventures. More recent research provides some qualifications. While entrepreneurs do learn from experience, it appears that a failed venture can be particularly difficult experience from which to learn. First, failure causes negative emotions. Furthermore, particularly salient failures, such as a failed business venture, can cause strong negative emotions such as grief (Shepherd, 2003), which has been shown to interfere with learning activities by preventing information processing (Shepherd, 2003; Shepherd *et al.*, 2011). Additionally, entrepreneurs, like all individuals, are subject to correspondence bias and tend to blame their business failures on external factors (Gilbert and Malone, 1995). As a result, in subsequent ventures they are likely to change or adjust external factors, such as changing industries, while keeping the internal factors, such as management style, the same (Eggers and Song, 2014). However, because switching industries forfeits valuable context-specific knowledge that entrepreneurs have learned about prior industry, subsequent venture performance declines. Furthermore, entrepreneurs ignore valuable potential learning opportunities about their strategies or styles.

Collectively, studies on rare strategic decisions indicate that while they are difficult to learn from due to their rare and idiosyncratic nature, they can be quite profitable sources of learning (Starbuck, 1993). However, if people are not cautious about their learning practices, they may fail entirely to learn from rare strategic decisions (Zollo, 2009). Specifically in the case of entrepreneurship, transferring learnings from failed businesses to subsequent new ventures may not be as simple as it appears (Eggers and Song, 2014; Shepherd, 2003).

4.4 Learning From Extraordinary Experiences: Summary

I defined extraordinary experiences to be those which fall outside the typical experiences of an actor. Such experiences included disasters, crises, and rare strategic decisions. I argue

that they are distinct from other types of experiences because of their rarity, their idiosyncrasies, and their salience. While relatively less explored than learning from direct experience and learning from indirect experience, this stream of research is growing. Research on learning from disasters, crises, and rare strategic decisions indicates that these events are indeed difficult to learn from due to their idiosyncratic nature (Kim *et al.*, 2009; Oh and Oetzel, 2017; Zollo, 2009). With respect to disasters, learning is highly context-specific and is difficult to transfer to future disasters (Oh and Oetzel, 2017). However, disasters do prompt organizations to reevaluate their capabilities and can lead to large scale organizational change (Christianson *et al.*, 2009). Additionally, because disasters are salient across organizational levels, they induce long-term learning, as the learning they produce is codified into organizational processes and routines by an organization's top managers (Madsen, 2008).

When it comes to organizational crises, research has proposed that distinct types of crises produce different types of learning, with some crises triggering transformative learning and others triggering merely transitory learning (Lampel *et al.*, 2009). In order to learn from crises, organizations should employ a top-down strategy geared towards creating synergy between the different attentional processes of its members (Rerup, 2009). Finally, research has begun to examine how certain factors such as the actions taken by population level actors can affect an organization's ability to learn from a crisis (Madsen and Desai, 2018).

Research on rare strategic decisions has highlighted the potential for learning from these types of decisions to be highly beneficial while also emphasizing the difficulty of learning from them. By learning from rare strategic decisions, managers can increase the flexibility of their organizations (Starbuck, 1993). However, organizations need to be wary of falling prey to the tendency to conduct superstitious learning from these types of decisions (Zollo, 2009). Finally, research has examined rare strategic decisions in the context of entrepreneurship.

Here, it has shown that emotions and psychological biases disrupt the ability of entrepreneurs to learn from their prior failed ventures when starting a new business (Eggers and Song, 2014; Shepherd, 2003).

4.5 Learning From Extraordinary Experiences: Future Directions

Despite research demonstrating that learning from extraordinary events is difficult due to their idiosyncratic nature, we still know little about how to generalize from these specific events and how to disentangle their potential causes. Research in the field of entrepreneurship could help advance this agenda. A study which examines the specific activities that successful serial entrepreneurs engage in to learn from their past experiences would contribute meaningfully to our understanding of how to generalize and identify causal links from extraordinary events. To my knowledge, there has been little theoretical development explaining the process of generalization from the specific or disentangling potential causal pathways. Rerup (2009) does discuss an organization-level theory for how to structure an organization to enhance learning from extraordinary events. However, he does not provide any theory to guide how individuals process said events to produce learning. Due to a lack of theoretical development, a case study of serial entrepreneurs could be particularly beneficial here. Additionally, given that learnings from extraordinary events, including rare strategic decisions like founding new ventures, are highly context-dependent, future research examining what aspects of prior experience are most advantageous to preserve would be beneficial. Here, a study examining what aspects of a business are least detrimental or most valuable to change from one venture to the next would contribute meaningfully to the literature.

As mentioned above, there has been some theoretical development regarding what organizational structures are effective at promoting learning from extraordinary events. However, this theory remains to be tested. Therefore, empirical work is needed to determine

the effects of specific learning behaviors, such as attentional triangulation, on the ability to learn from extraordinary events. This empirical work should examine the relative effect sizes of the different attentional processes. Specifically, it should assess if attentional stability, attentional vividness, or attentional coherence is more important for learning from extraordinary events. Rerup (2009) suggests that attentional coherence may be more important than the other attentional processes, but this claim needs empirical validation.

Future research should also explore the interactions between firms and population level actors. Virtually no research has explored the role of population level actors in organizational learning (for an exception see Madsen and Desai, 2018). Kim and Miner (2007) opened the door to interpopulation learning by demonstrating that it exists. However, additional research on the topic is warranted because little is understood about the phenomenon. Future work should examine how population level actors can promote interpopulation learning and what capabilities a focal organization needs in order to be able to learn from other populations. An examination of the activities that accelerators undertake to transfer learnings across various startups could be informative towards advancing our understanding of this phenomenon.

5. Discussion

Overall, in this paper, I have reviewed the literature on organizational learning from failure and success. In synthesizing this literature, I have identified several themes. The first is that organizations focus their learning on events that are particularly salient to them and events about which they have sufficient information. In the learning from direct experience stream, it was clear that organizations learn better from failures than from successes because failures represent surprising events and as such, they attract the organization's attention. The learning from indirect experience stream demonstrated that organizations focus their learning on other organizations and events that are salient to them. Organizations tend to learn from other organizations that are similar to them, highly successful, or very prominent, and they

tend to learn from events that are highly visible. The learning from extraordinary events stream established that organizations and individuals exert a lot of effort to learn from extraordinary events because they are particularly salient to the actors involved. Thus, overall, research shows that the salience and visibility of experiences facilitate learning.

Second, research across the streams shows that the timing of events is important for determining learning outcomes. When learning from direct experience, experiencing successes too early in one's history leads to success traps, while later successes produce positive learnings. The timing of direct experiences with failures can moderate the relationship between direct experience with success and positive learning outcomes. The timing of experiences also matters when learning from indirect experience. For example, at the individual level, experiencing others' success before experiencing failure facilitates learning from one's own failures.

Furthermore, this review unveiled that while learning presents many opportunities for improvement, there are also many dangers associated with attempting to learn from past experience. With respect to learning from direct experience, it is clear that both organizations and individuals can learn to do things incorrectly. Organizations learn to be overconfident from too much direct experience with success, and correspondence bias at the individual level reinforces behaviors that lead to failure. In research on learning from indirect experience, the notion that learning can reinforce negative behaviors resulting in decreased performance is further supported. For example, an actor's inability to assess outcome quality can lead them to model behaviors associated with poor performance. In the learning from extraordinary events stream, due to the highly idiosyncratic nature of extraordinary events, learning is highly likely to be superstitious and produce decreased performance. Across the literature, therefore, organizations must balance their desire to learn from prior experience with the perils of teaching themselves how to fail.

It is also abundantly clear that organizations struggle immensely with identifying generalizable lessons from their prior experiences. When learning from direct experience, actors suffer from initial performance decreases when attempting to learn from their own failures. Because events are removed from the focal actor, in attempting to learn from indirect experience, learners struggle to gather the necessary amount of information about others' experiences leading them to ignore many opportunities to learn. Finally, actors who want to learn from extraordinary experiences are challenged by an inability to generalize from the very specific nature of a given extraordinary experience. Strategies that enable actors to verify the content of their learnings are especially beneficial.

One major gap across each of these research streams is that research on organizational learning from failure and success, whether it is from direct, indirect, or extraordinary experiences, often relies on inferring learning on the basis of performance changes as a result of past experience. Thus, the majority of the research on learning from failure and success ignores the content of the learning that takes place (for an exception see Bingham and Eisenhardt, 2011). This tends to be a consequence of the nature of the data used in the majority of these studies. Much of the empirical data researchers utilize consists solely of experiences and outcomes, and therefore, studies have little insight into what is actually being learned by either individuals or organizations. Even with qualitative research, the research questions at the heart of studies often do not relate to learning content. Therefore, overall, research on organizational learning could greatly benefit from a closer examination as to the nature of the content that is learned from failure and success.

Additionally, this review of organizational learning reveals that most studies of learning ignore the role of emotion. Notable exceptions include studies examining the effects of some negative emotions on learning (Bohns and Flynn, 2012; Shepherd, 2003; Shepherd *et al.*, 2011). However, there is ample opportunity for future research to develop our understanding

of the role that emotions, both positive and negative, play in learning from failure and success. Future work could examine how an actor's framing of an event affects their ability to learn from it. For example, an entrepreneur could frame a failed business as a learning opportunity and thus be less likely to experience negative emotions and more likely to learn from the failure. Research examining how positive emotions affect learning, could examine how feelings of elation that follow success may inhibit the processes associated with learning behaviors, such as the detailed analysis of the causal relationships underlying the experience. Research on emotions indicates that people experiencing negative emotions are more detail-oriented than their peers experiencing more positive emotions, therefore perhaps feeling some negative emotions following a failure may actually facilitate certain types of learning (Schwarz and Clore, 2007).

Additionally, research on learning from failure should incorporate more findings from the social psychology literature. For example, research would benefit from incorporating prospect theory, which posits that an individual's propensity to engage in risky behavior depends on their relative gains or losses (Kahneman and Tversky, 2012). Such research could develop our understanding of what conditions are necessary for entrepreneurs to actually apply the lessons they may have learned from prior businesses by founding subsequent ventures.

6. Conclusion

The goal of this review was to summarize the literature on organizational learning from failure and success. In reviewing the literature, three distinct streams of research were identified: learning from direct experience, learning from indirect experience, and learning from extraordinary experiences. The first two streams were the most developed. The third stream is composed of the integration of research around an emerging area of interest, what I termed extraordinary experiences. Extraordinary experiences are defined to be those which

fall outside of the typical experiences of an actor, and my review of the literature identified three categories of extraordinary experiences, namely disasters, crises, and rare strategic decisions. Within each stream of the literature, I reviewed the key findings and outlined the extent of our understanding of learning from various experiences. Furthermore, I outlined future directions of research for all three streams. Pursuing an advancement of our understanding of how organizations learn from failure and success is something I plan to pursue in my future research efforts.

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