

THE PHENOMENON OF FAILURE SHARING

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Abstract

Individuals in organizations are often confronted with failure. Failure can be costly for organizations and may stigmatize individual careers and organizations' reputations. Failure can, however, be a valuable opportunity that allows individuals and organizations to learn from it to improve performance. Current *learning from failure* literature implicitly assumes that failure is shared at work. However, no empirical study has investigated the behavior of sharing failure. Therefore, this study explores sharing failure and failure experience in the workplace by asking three major research questions: RQ1: Why do individuals share, or not share, failure with others? RQ2: When they do share failure, why did individuals choose the respective target to share failure with? RQ3: What do individuals learn from sharing failure? This study found that two factors motivate individuals to share their failures with others: help seeking and help giving. On the other hand, several other factors deter individuals from sharing their failures with others: fear of repercussions, managing impressions, and protecting others. Once an individual decides to share their failure and failure experiences with others, the individual is selective about whom they will share their failure with. Several attributes of the potential target(s) influence this choice: perceived ability of the target, desired help, and proximity. This study found that post sharing failure with others, sharers learned more about their failure and their failure sharing behavior and/or gained psychological benefits. The three research questions are independent, but findings are interdependent, such that each part is required for learning from sharing failure. Taken together, these findings contribute to the learning from failure and knowledge sharing literature to give researchers and practitioners a deeper understanding of the dynamics of sharing failure and failure experiences. Also, these findings are relevant and important to individuals as

well as organizations as they can modify their failure sharing behaviors with the goal of learning from failures.

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1 Introduction

You might never fail on the scale I did, but some failure in life is inevitable. It is impossible to live without failing at something, unless you live so cautiously that you might as well not have lived at all—in which case, you fail by default. —J.K. Rowling

1.1 Statement of the problem

When J. K. Rowling wrote the first Harry Potter book, she had hit rock bottom. She was faced with bankruptcy and dependent on welfare. After a dozen publishers rejected her manuscript, one finally agreed to publish it. Even so, the publisher did not see the potential in Rowling's work and told her that she needed to get a job because there was no money in children's books. She is now a billionaire. "An exceptionally short-lived marriage had imploded, and I was jobless, a lone parent, and as poor as it is possible to be in modern Britain, without being homeless. . . . By every usual standard, I was the biggest failure I knew," Rowling said during a 2008 Harvard University commencement speech (Rowling, 2008).

Failures are common, and we have all failed at something at some point in our lives. Whether we failed a driving test or failed at running a profitable business, failure affects all our lives in big and small ways. Failure is important as it has the potential to alter our lives significantly. However, what is more interesting is to ask why people share their experiences of failure with others. Why would, and why did, Rowling discuss her failure with Harvard's fresh graduates? Perhaps she saw the value in her failure and wanted to share how she overcame them. Rowling's failure was followed by immense success, and one might argue that it is easier to share a failure after one has succeeded. Would someone be as willing to share a failure so publicly as she did if they were still suffering the consequences of the failure? Steve Jobs also publicly shared his failure when he was fired from the company he co-founded (Jobs, 2005; as cited in Pangambam, 2018) "what had been the focus of my entire adult life was gone, and it

was devastating. I really didn't know what to do for a few months. I felt that I had let the previous generation of entrepreneurs down—that I had dropped the baton as it was being passed to me.”

Failure sharing does not only happen at public events, as shown in Rowling's and Job's speeches; failure sharing can, and does, occur among individuals at work. This is the main focus of this dissertation: Why do people share their failures and failure experiences with others?

Importantly, failures have the potential to negatively impact an individual's career and/or an organization's reputation. Because of failure's significance, research on failure has spanned multiple fields such as psychology (Ellis & Davidi, 2005; Hofmann & Mark, 2006), organization studies (Chuang & Baum, 2003; Kim & Miner, 2007; Sitkin, 1992), strategic management (Muehlfeld, Sahib, & Van Witteloostuijn, 2012), sociology (Perrow, 1999), and health care management (Chuang, Ginsburg, & Berta, 2007). Failure can, however, be a valuable opportunity that allows individuals and organizations to learn from it to improve work performance (Sitkin, 1992). In recognizing the potential of failure to improve performance, the focus of recent studies on failure has started to shift from why and how failure occurs in organizations to how individuals and organizations can, or cannot, learn from failure. Learning from failure has been conceptualized as the process by which individuals, groups, or organizations search for potential solutions in an attempt to reduce the likelihood of similar failure in the future (Dahlin, Chuang, & Routlet, 2018). As stated by Rowling, the power of failure in and of itself is something from which to learn. Some failures lead to success, while other failures lead to even more failure, but all of these experiences can teach us something. This is useful and important information, and what is currently lacking in the literature is the

gap between failure and learning from failure. In this dissertation, I fill this gap by investigating the phenomenon of *failure sharing*.

1.2 Gaps in the literature

Despite the recent interest in understanding how individuals and organizations can learn from failure, most studies on learning from failure have focused primarily on factors that facilitate or hinder individuals from learning from failure, such as psychological safety (Carmeli & Gittell, 2009), job autonomy (Kerr, 2009), and emotion (Zhao, 2011). An implicit assumption in these studies is that sharing failure or the failure experience provides opportunities for individuals and others to learn from the failure. Little attention has been devoted to understanding the conditions under which individuals share their failure with others. Nevertheless, understanding such conditions is meaningful as sharing failure is one of the first steps in the learning process (Argote, 2005). It is important to investigate and fill this gap in the literature so that organizations can better understand and facilitate how employees share their failures and failure experiences at work. Organizations and employees can then learn from such sharing to improve or further enhance their performance.

1.3 Purpose of the study and research questions

The purpose of this study is to examine failure sharing behavior in organizations by focusing on three research questions:

RQ1: Why do individuals share, or not share, failure with others?

RQ2: When they do share failure, why do individuals choose the respective target they do to share their failure with?

RQ3: What do individuals learn from sharing failure?

In the findings, three sets of models will be presented (see the findings chapters, 4, 5, and 6) that integrate the themes that emerged in the data along with the themes from the respective disciplines (learning from failure and knowledge sharing). To bring all the findings and contributions of this study together, a conceptual model has been created (see Figure 15 in chapter 7) to provide a holistic understanding of the experience of failure sharing.

1.4 Defining key concepts

Sharing failure behavior in organizations includes sharing failure and failure experience. Hence, it is important to define key concepts in this study. Specifically, “failure” has been defined in many ways in past studies. However, these definitions all agree that failure is a deviation from expected and desired results or goals (Cannon & Edmondson, 2001; Hofmann & Frese, 2011; Sitkin, 1992). In this study I modify this definition of failure to mean only negative deviation from expected and desired results or goals. This, therefore, excludes positive deviation from expected goals, that is, when an individual exceeds expectations.

To date, studies have conceptualized failure as errors, mistakes, accidents, incidents, and adverse events in order to examine how individuals and organizations can, or cannot, learn from failure (Chuang & Baum, 2003; Chuang et al., 2007; Edmondson, 1996; Zhao, 2011). The difference between errors and failures should be noted; errors are misinterpretations of received information (Zhao, 2011), and failures have been defined as a negative deviation from expected or desired goals or results. Failure can be the result of an error, and it can lead to further errors. However, an error does not necessarily lead to failure.

“Failure experience” refers to an individual’s experience of negative deviation from expected or desired goals or results as a result of their own action. Failure experience can be related to past or ongoing failure, with or without a solution (i.e., a failure that has been

resolved). “Sharing” one’s failure experience means the voluntary disclosure of one’s failure experience with others in or outside the organization.

The use of the term “sharing” implies that the process of failure sharing involves intentional action on the part of the individual who has failed. Davenport (1997) defined sharing as a voluntary act and distinguished it from reporting. Reporting refers to a structured organizational requirement, or standard operating procedures (SOP), to inform others about events. SOPs regulate routine work, and any failures that are required to be reported in accordance with the organization’s policies are outside the scope of this study. Although reporting can be voluntary, it is also an requirement of some organizations that employees report certain issues. Failure sharing, on the other hand, requires a conscious act by an individual who participates in the disclosure of failure that is not officially required by the organization.

1.5 Research design and analytical approach

The aims of this study and the research questions draw on the ontological stance of interpretivism. Thus, this study aims to explore the experience of sharing failure behavior (the motivation to share failure, whom individuals shared failure with, and what they learned from sharing failure). Interpretivism deals directly with informants’ lived experience as it unfolds in its natural setting (Denzin, 1989). Using an intepretivist ontological stance, I see informants as agentic actors (people are active agents who design and modify their own lives), and it allows me to explore their subjective experiences.

The setting of this study is research and development (R&D) departments of high-tech firms in Shanghai, China. Software engineers/developers were the informants of this study. The reason for choosing such a context was because the high-tech industry is characterized by high

rates of failure due to its rapid pace of change and unpredictable nature of developing new software. Purposeful sampling was used for initial contact with informants. I then used snowball sampling to gain access to informants. I conducted a total of 32 face-to-face interviews with software engineers/developers in Shanghai. All interviews were audio taped and transcribed and then analyzed using thematic analysis (King, 2004) to identify the key themes in interviewees' experiences of failure sharing.

The three major research questions of this study aim to elucidate sharing failure behavior. In this study, I used an abduction approach to help make new discoveries in this exploratory study. Prior theorizing informed the research questions of this study, and theories were used as a “sensitizing device” to help inform (though not restrict) data analysis. The theories I used to analyze the data were organizational learning (Allert, Richter, & Nejd, 2004), theory of self-disclosure (Omarzu, 2000), impression management (Leary & Kowalski, 1990), and psychological safety (Siemens, Roth, Balasubramanian, & Anand, 2008). I will discuss these in greater detail in chapter 3.

1.6 Key findings and contributions

This study found that failure is shared, but it is shared for specific reasons and with targeted individuals to reveal certain details of the failure.

Sharing one's failure is a strategic decision motivated by several factors. An individual may choose to share their failure in order to seek help. This could be technical help (e.g., help with software coding) or emotional support. In other instances, an individual may choose to share their failure to help others (this is usually after a solution to the failure has been found). Such failure sharing could be driven by altruism, reciprocity, or instrumentalism. Most, but not all, instances of sharing failure as a way to offer help have an underlining element of

relationship maintenance between the sharer and target. For example, to reciprocate a colleague's kindness, the sharer decides to share their experience of failure and the solution to the failure with a colleague so that the colleague is aware of the failure and how to solve it. In this way, the relationship between the sharer and the colleague is maintained by mutual help.

The choice of target is a calculated decision on the part of the sharer, as failure sharing would be different for different targets. For example, some people choose not to share their failure with their team leader because they are unsure of their team leader's reaction to their failure or to manage others' impression of them at work. Other possible reasons individuals do not share their failure would be to shield another person from the stress that comes with knowing about failure.

Although the research questions were explored independently, data from this study reveals that they are interconnected. For example, the reason for sharing failure affects who the target is, and the chosen target may affect the learning that takes place from sharing the failure. Importantly, this work reveals that target selection and motivations to share failure are interconnected, meaning that certain motives will lead sharers to share their failure with some targets, while avoiding other targets. The sharer needs to decide among a range of potential targets. For example, an individual may choose not to share failure with their team leader because of a fear of repercussion, while this fear may not be present when sharing the same failure with a colleague. When an individual does want to share their failure with others, the sharer weighs the risks and benefits of sharing and not sharing, and if sharing, the risks and benefits of sharing with target X or target Y.

Choosing the target of failure sharing is dependent on several attributes of the target. From the sharer's perspective, who would be the most suitable to help address and resolve the

failure, who has an interest in the failure, who is in the same/a similar work project, who is spatially close, and who shares a relationship bond?

The choice of target also influences what the sharer can learn from the failure and failure sharing, which has an impact on the sharer's future ability to share failure. In studies of learning from failure, scholars found that learning from others is done mainly via distant observations (Baum & Dahlin, 2007). However, the learning that comes after sharing failure is relational. In other words, the direct interaction between the sharer and the target helps to facilitate the learning.

Past studies have overlooked what individuals learn from sharing failure and the benefits associated with such sharing, as sharing failure has not been a focus in these studies. This study found that after failure sharing, sharers learned about the technical nature of their failures, how to approach resolving the failure, and how they could modify their sharing behavior. This study found that learning from failure led to first-order and/or second-order learning. First-order learning emerges when sharers learn of solutions to their failure. Second-order learning occurs when sharers learn the root cause of their failure and ways to resolve the failure. This difference in the help received from targets also impacts what the sharer learns from the failure. Sharers also reported several psychological benefits of sharing failure, that is, sharing failure can lead to emotional comfort. This study revealed that benefits from sharing failure can be intended or unexpected, such as gaining emotional support or technical help from targets whom the sharer did not know had such attributes.

If the outcome of the sharing is positive (e.g., a solution is found to resolve the failure), the sharer may feel that it was indeed the right decision to share their failure and to share with the target they did. If an individual were to fail at work again, they might choose to share with

the same targets, knowing that they benefitted from this the previous time. But if the outcome of sharing is negative (e.g., the sharer's reputation at work is diminished), the sharer may feel that it was not the best decision and/or that the particular target was not the best choice. All of this influences future decisions to share or not to share failure.

In sum, failure sharing is a strategic action. Failure is shared for specific reasons to selected targets, and to reveal certain details of the failure. Lessons learned from sharing failure have an impact on the individual's future failure sharing behavior.

1.7 Structure of dissertation chapters

This first chapter is an introduction to the phenomenon of failure sharing. In this chapter, I identify the gaps in the literature and present the research questions. To better understand the significance of the research questions of this study, chapter 2 is a review of learning from failure and knowledge sharing literature.

Chapter 3, Research Methodology, discusses the research design and methodology of this study, detailing the ontological and epistemological paradigm of this study, the research context, sampling, data collection, data analysis, ethical considerations of this study, and potential research limitations.

Findings are presented in chapters 4, 5, and 6; each chapter corresponds to a research question. Chapter 4 presents the factors influencing the reasons to share failure. Chapter 5 identifies the attributes of targets of failure sharing that lead sharers to choose specific targets. Finally, chapter 6 identifies themes regarding learning from failure sharing.

In the final chapter of this dissertation, I reflect on the entire study, revisiting the overall findings of this study and its contribution to the understanding of sharing failure. I have developed a conceptual model (Figure 15) that depicts the multiple factors that are at play in

influencing an individual to decide to share failure, who the target will be, and what is learned from sharing failure. A discussion about how the findings of this study contribute to related scholarship is then presented. The chapter ends with a discussion of the credibility and rigor of this study, areas for future research, as well as related practical implications.

2 Literature Review

In this chapter, two main streams of literature will be reviewed, namely learning from failure and knowledge sharing. The reason to review learning from failure literature is because this study looks at sharing failure, a behavior that is implicitly assumed in this literature. The reason to review knowledge sharing literature is because it forms the foundational understanding of sharing behavior (i.e., the motivation to share and the target of sharing).

The scope of this literature review are articles that meet the following criteria: First, the article has to be an empirical study. Second, the article must be published in a peer-reviewed journal to ensure a standard of quality, credibility, and rigor (Hiller et al., 1979). Third, the article must be published in English. Fourth, the must article include at least one of the following terms in the article title and/or abstract: “learning from failure,” “failure,” “knowledge sharing,” or “knowledge management.” Fifth, the article must be about research conducted at the individual level. Sixth, the articles reviewed in learning from failure literature must be post-2000 because that is the year this field of study was identified. For knowledge sharing literature, articles reviewed are post-2010 as that is the publication year of the most recent review paper in the field written by Wang and Noe (2010). Finally, the articles included were mostly published in leading peer-reviewed OB/HRM journals: *Academy of Management Journal*, *Human Resource Management Journal*, *Journal of Organizational Behavior*, *Journal of Management*, *Journal of Applied Psychology*, *Organizational Science*, *Administrative Science Quarterly*, *Health Services Research*, *Management Information Systems Quarterly*, and *Journal of Knowledge Management*. This literature review includes articles published in *Health Services Research* because learning from failure has increasingly received attention in the healthcare industry and in *Management Information Systems Quarterly* and *Journal of*

Knowledge Management because these journals have published articles that look at knowledge management in organizations, which includes knowledge sharing.

Finally, the literature review will include a discussion on how this study draws upon these two topics and the significance of combining them to inform the research questions of this study.

2.1 Learning from failure

While studies have differed slightly in their definitions of failure, a common thread that runs through these definitions is the understanding that failure is a deviation from expected and desired results or goals (Cannon & Edmondson, 2001; Hofmann & Frese, 2011; Reason, 1997; Sitkin, 1992). Thus, “learning from failure” has been conceptualized as the process by which individuals, groups, or organizations search for potential solutions in an attempt to reduce the likelihood of similar failure in the future (Dahlin et al., 2018). Prior studies on learning from failure have conceptualized failure as errors, mistakes, accidents, incidents, and adverse events as a way to examine factors that influence processes of learning from failure (Cannon & Edmondson, 2001; Chuang et al., 2007; Edmondson, 1996; Haunschild & Sullivan, 2002; Reason, 1997).

Failure can be avoidable or unavoidable, and intentional or unintentional (Cannon & Edmondson, 2001; Hofmann & Frese, 2011). Types of failure examined in studies include operational failure/errors (Baum & Dahlin, 2007; Cannon & Edmondson, 2001; Haunschild & Sullivan, 2002; Madsen & Desai, 2010) and strategy failure (Chuang & Baum, 2003). Failure has been further categorized as human failure/error (deviation derived from an individual’s behavior) and latent failure/error (deviation arising from organizational administrative processes and systems; Ramanujam & Goodman, 2003; Reason, 1997; Zhao & Olivera, 2006).

The literature of learning from failure at the individual level can be categorized into four main areas: contextual factors of learning from failure, individual factors of learning from failure, motivational factors of learning from failure, and learning from failure and its outcomes (see Figure 1 below).

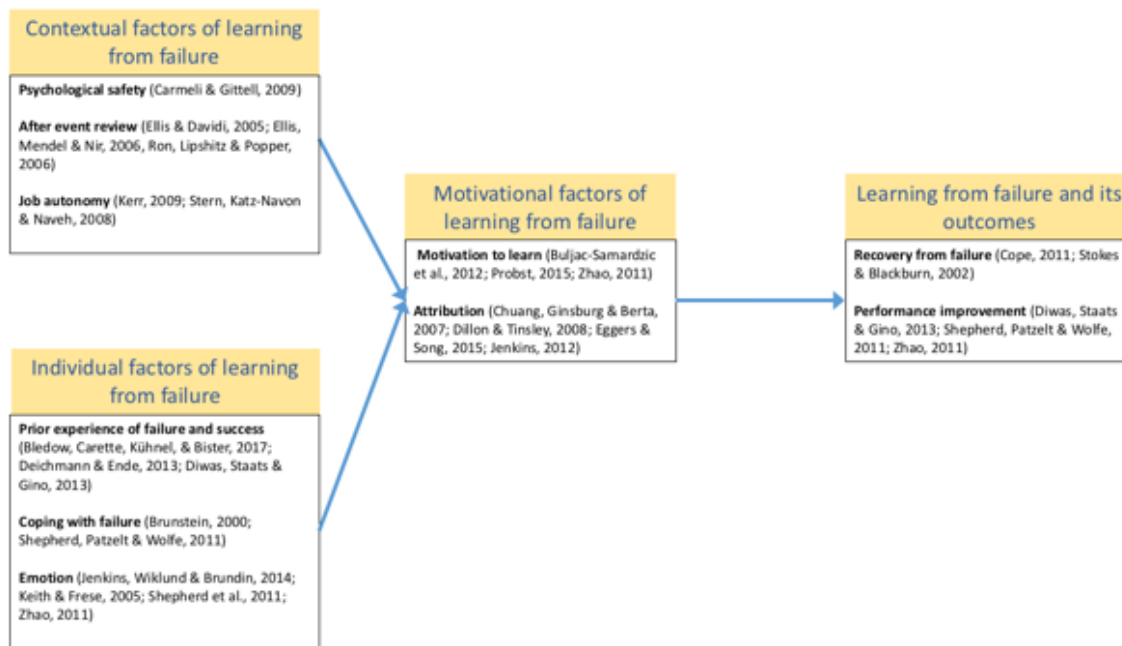


Figure 1: Learning from failure at the individual level: Literature review

2.1.1 Contextual factors of learning from failure

When failure happens, there are several factors that influence how individuals react to failure and learn from it. These contextual factors of learning from failure include psychological safety, after-event review (AER), and job autonomy. The relationship between these contextual factors and learning from failure are mediated by the individual's motivation to learn from failure.

2.1.1.1 Psychological safety

Psychological safety refers to the degree an individual feels safe to take a risk in a group (Carmeli & Gittell, 2009). Studies on learning from failure show how psychological safety affects learning. Carmeli and Gittell (2009), in their study of workers in software, electronics, and finance industries in Israel, found that high-quality relationships were positively associated with psychological safety and that psychological safety was positively associated with learning from failure. They found that psychological safety mediated the link between high-quality relationships and learning from failures, and they argued that these high-quality relationships comprised members with shared goals, shared knowledge, and mutual respect for each other (Gittell, 2003), which increased the sense of psychological safety. Because there is a sense of feeling safe in a group, individuals are more motivated to learn from failure. This article focuses on learning from failure, not sharing failure.

2.1.1.2 After-event reviews (AERs)

With prior experience of failure and feeling psychologically safe, an individual has a higher chance of learning from their failure. The next contextual factor of learning from failure is after-event reviews (AER) as mandated by the organization. The aim of AERs is to help individuals and groups gather and analyze data that will ultimately improve their performance post-event. More specifically, they give individuals an opportunity to analyze their behavior systematically and to evaluate the contribution of its various components to performance outcomes (Ellis, Mendel, & Nir, 2006). Ellis et al. (2006) conducted lab experiments in which undergraduate students enacted business scenarios (a competition to gain the highest market share of the country's beer market) and underwent an AER based on which manipulation group they were assigned to. The researchers manipulated four different types of AER conditions

(failure focused, success focused, failure- and success focused, and no AER review). In the failure-focused condition, participants were channeled towards the factors that hindered their progress in the game (e.g., they were asked to reconstruct certain moves that prevented them from achieving a higher market share). In the success-focused condition, participants were asked to point out only the specific actions that supported or explained their successful decisions or moves. In the failure- and success-focused condition, participants were asked to focus on both the positive and negative aspects of their performance. They were asked to reconstruct the behaviors that either supported or dampened their performance outcomes. Finally, in the control group, participants did not undergo any form of AER and were only told that they would be given another opportunity to improve their outcomes. Instead of having an AER, they were given a 15-minute break. After all AERs have been administered, participants were asked to write down all the causes for their success or failure and then were asked to perform the business scenarios a second time with a new set of data. Ellis et al. (2006) found that in situations of failed events, any kind of event review was effective, whereas in successful events, the most effective AERs were those reviewing wrong actions, although the outcome was successful. This highlights the importance of drawing lessons from both successes and failures through AERs. Ellis et al. (2006) argued that when the learner's goal was to accomplish immediate performance improvement, they gathered and elaborated on as much relevant information as quickly as they could before deciding if the information was useful and then used it in subsequent actions. Thus, directing learners to detect and elaborate errors when they experience a relative success may be even more important than doing so after relative or complete failure. Ellis and Davidi (2005) examined the effect of AERs on soldiers' training performance and reported similar findings. Soldiers who underwent an AER on both success

and failure had the highest performance, compared to those who underwent an AER after either a success and failure.

Continuing on with AERs and their impact on learning from failure, Ron, Lipshitz, and Popper (2006) qualitatively studied the AERs of 13 pilots and navigators from a fighter aircraft squadron of the Israel Defense Force Air Force. They argued that an organization's ability to learn and the relationship between individual and organizational learning can be seen in examining their AERs. This is because the protocols of the AERs revealed the Force's belief about learning from failure and its expectations of its employees in times of failure. Ron et al. found that learning in the post-flight reviews was a multi-layered process of retrospective sense-making, detection, and correction of error, social comparison, social control, socialization, and bonding, where lessons learned pertained to different domains and different levels: individual, unit, and force-wide.

2.1.1.3 Job autonomy

Autonomy refers to the degree of work responsibility or independence given to an individual or group. Kerr's (2009) case study of clinics in the UK found that team-based approaches to error management was a double-edged sword. Kerr (2009) argued that there needed to be a balance between individual and team autonomy. This is because team-based approaches can create the conditions for errors to occur when they undermine independent thinking, responsibility, or concentration. There was also a danger that teamwork would be associated with particular technical practices or occupational groups, diminishing its relevance and value in clinical settings. Therefore, Kerr concluded, diminished individual autonomy hindered error management.

Similarly, Stern, Katz-Navon, and Naveh (2008) studied the effects of autonomy on error making. Stern, Katz-Navon, and Naveh (2008, p. 1554) borrowed this definition of autonomy from Hackman & Oldham (1976): “the extent to which employees perceive that they have the freedom and discretion to plan, schedule, and carry out their jobs as they see fit”. Their sample of healthcare workers worked in a high situational learning environment. This meant that employees received constructive feedback, spurring them on to further learning, which in turn led to better understanding of work processes and more knowledge about how to successfully perform their tasks. They hypothesized that a perceived high situational learning orientation might eventually prevent an error from occurring or, once having occurred, from reoccurring. Stern et al. (2008) found that by encouraging employee autonomy, the company fostered learning by decreasing the number of treatment errors. Specifically, when the situational learning orientation was high, the number of errors decreased at an increasing rate as the perceived autonomy increased.

To summarize, we have seen four contextual factors that impact the degree of learning from failure. Prior experience of failure increases the likelihood of learning from failure, and learning from failure has been found to be more effective when there is safety in the team. Organizations that implement AERs have benefited from deeper analysis of failures (as well as successes), which has resulted in a higher degree of learning from failure. Finally, job autonomy increases the chances of learning from failure.

2.1.2 Individual factors of learning from failure

Individual factors also have an impact on how failure is perceived and the actions that are taken. Individual factors discussed in this literature review are prior experience of failure

and success, the ability to cope with failure, and emotion regulation. Such individual factors, in conjunction with ideal contextual factors, can motivate the individual to learn from failure.

2.1.2.1 Prior experience of failure and success

Scholars have examined the effect of an individual's experiences (both success and failure) and experiences of others on that individual's learning. Firstly, an individual's prior experience of failure influences how the individual perceives their failure and the actions that they take afterwards. Deichmann and Ende (2013) studied how experiences of failures and successes had an impact on the likelihood of an employee suggesting new and radical ideas. They defined radical ideas as a completely new way of thinking that would require substantial changes to old ways of working if implemented. They used the data of 1,792 radical ideas suggested by 908 employees in a multinational firm's idea and innovation program. They expected that the experience of prior failure would discourage a repeat in initiative taking ("repeat" here means a repeat of the action of suggesting radical ideas, that is, an employee would not suggest any more radical ideas after experiencing failure with their initial idea), as failures tend to attract negativity and can cause low self-confidence. However, their findings showed the opposite. They found that failures, rather than successes, of initiators (i.e., employees who suggested the radical ideas) increased the likelihood of repeat initiative taking. This suggests that prior experience of failure contributes to an individual's learning and idea generation.

Prior experience of failure is important for learning. Another stream of research shows that one's prior experience of success, in addition to others' experiences of failure, improves future learning from failure. Diwas, Bradley, and Staats (2013) used 10 years' worth of data from cardiothoracic surgeons who completed more than 6,500 procedures using a new

technology for cardiac surgery. They argued that although failure may be an important source of information for learning, individuals may not rely on it as much as they rely on success when evaluating their own prior experiences. They also found that an individual's prior successes and others' failures helped that individual overcome their inability to learn from their own failures. Although one's own failure may be an important source of information for learning, the authors argued that individuals may not rely on it as much as they rely on success when evaluating their own prior experiences because individuals tend to attribute their failures to external factors (thus not recognizing the role of their actions in such failures) and their successes to internal factors (i.e., their own ability). When failures are perceived to be caused by external factors, individuals see themselves as having less control over the failure, thus assuming that they have less to learn, and, therefore, they may not learn from their potential mistakes. Whether an individual's past action resulted in a success or a failure is an important predictor of future performance, as each type of experience can alter the individual's willingness to engage in improvement activities. Scholars argue that success leads to a local search, that is, the refining of previous actions, whereas failure leads to a nonlocal search, or more substantial deviation from prior choices (Audia & Goncalo, 2007; Baum & Dahlin, 2007). Through failure, an individual can learn what does not work and then try a new approach to increase their likelihood of reaching a successful outcome in the future (March & Simon, 1993; Sitkin 1992).

Similarly, Bledow, Carette, Kühnel, and Bister (2017) found through their experimental study using social sciences students that other peoples' failures are a neglected source of managerial learning that is associated with enhanced learning transfer. This means that stories about managerial failures lead to more elaboration and learning, in particular for individuals who see the learning potential of failures. They argued that failure stories are more likely than

success stories to motivate learners to allocate cognitive resources and extensively elaborate on the content of the stories. More specifically, failure stories should attract attention and prompt reflection so that the learner actively breaks down the story and analyzes the critical elements that caused the failure. The individual is spurred by failure to find new adaptations for future similar situations (Kuhl, 2000).

This section has shown that prior experience of failure is a contributing contextual factor to learning from failure. The individual's experience of failure and/or success have an impact on the degree of learning from failure. In addition, the prior experience of failure of others also helps the individual to learn from their failure and avoid similar situations in the future.

2.1.2.2 Coping with failure

Failing means that a goal was not met. This is often taken personally, which makes understanding the failure event more difficult and impacts learning. Psychologists studying coping have for a long time been investigating why some individuals are able to recover from a major loss and grow as a result (Archer, 1999; Shepherd, 2003; Stroebe & Schut, 2001).

Brunstein (2000) argued that effective coping with failure depends on two factors: 1) the individual must be committed to a certain self-definition. In Brunstein's (2000) lab study of students, self-defining goals were goals set by the individual, and individuals who fell short of a self-defining goal increased their goal-directed efforts to make sure that they were capable of achieving the goals. Therefore, this mechanism of coping with failure is one in which the person is determined to succeed and never gives up. Here the mechanism of coping is to deal effectively with something difficult. 2) the task that follows the initial failure must provide an alternative way of demonstrating one's identity-related proficiency (i.e., it must be a task that the individual is good at). Brunstein (2000) noted that both factors are necessary, and if only

one of the two factors are fulfilled, individuals who fail will likely suffer from motivation and cognitive impairments. Those who lack a firm sense of commitment are easily discouraged and often withdraw from further task attempts. But even those who have a strong self-definition tend to dwell negatively on their failure, should they be left with an opportunity to undertake further identity-relevant tasks.

Shepherd, Patzelt, and Wolfe (2011) found from their sample of German scientists that emotional healing from project failures depends on the strength of the individual's specific coping orientation. They found that wounds from failures are less deep for those who perceive that their organization normalizes failure. Normalizing failure means that the organization does not attach significance to failure, that is, the organization sees it as normal or just another ordinary event. They argue that moving forward as the only way to learn from failure, as some studies suggest, does not fully capture the failure experience, as there is a stage of restoration that is also important. A restoration orientation refers to suppression of feelings of loss and being proactive in the face of secondary sources of stress that arise from loss (Stroebe & Schut, 1999, p. 214). Neither of these dimensions (loss or being proactive) contributes to learning from failure, but both are likely to lessen negative emotions, making coping with failure easier.

2.1.2.3 Emotion

Failures are challenging situations that usually cause negative emotions (e.g., embarrassment, anger, sadness). As mentioned in the previous section, Shepherd et al. (2011) studied how people process project failure as feedback and use this to move forward after a project failure. They used a sample of natural scientists, economists, and others working on R&D projects at research institutes in Germany. They found that emotional healing from project failures is dependent on the strength of the individual's specific coping orientations and how

they perceive that their organization normalizes failure. For example, those who perceived their organization as normalizing failure tended to have fewer negative emotions about their project failure. Shepherd et al. argued that by interpreting an extraordinary event as something seemingly ordinary, that is, normalization, individuals saw failure as less disruptive and problematic.

Zhao (2011) found in her study of students that negative emotionality can motivate learning, which leads to improvement of performance. Using a computer simulation task, participants' self-reported motivation to learn from errors had a positive association with their actual failure learning. Zhao (2011) argues that the stimulating role of negative emotionality increases the motivation of people to learn from errors and setbacks because the uncomfortable emotions serve as an alarm, reminding people that something is wrong with the current situation and needs to be fixed.

Keith and Frese (2005) found in their experimental study, also of students, that individuals with greater self-regulation in terms of emotional control learned from errors better than individuals with less self-regulation. Borrowing from Kanfer, Ackerman, and Heggestad (1996), Keith and Frese (2005, p. 186) described emotion control as a skill involving "the use of self-regulatory processes to keep performance anxiety and other negative emotional reactions (e.g., worry) at bay during task engagement". Emotion control has been shown to be particularly important for learning in early phases of skill acquisition, at which time errors and setbacks are most likely to occur. Failure to control emotions results in impaired learning and performance because negative emotions divert attentional resources to the self and away from the task at hand (Kluger & DeNisi, 1996). Keith and Frese (2005) argued that error management training helped participants develop and practice beneficial skills of emotion control early on in training

because error management instructions framed errors positively which encouraged participants to adopt a positive perspective on errors.

Zhao (2011), Shepherd et al. (2011), and Keith and Frese (2005) all found that emotions and the ability to manage emotions affected the learning that took place after the failure/error.

Finally, Jenkins, Wiklund, and Brundin (2014) studied entrepreneurs' reactions to firm failure using appraisal theory. Given that grief plays an influential role in the process of learning from failure and reducing entrepreneurial motivation, they examined what makes firm failure emotionally devastating for some entrepreneurs while not others. Central to this theory is the idea that people's emotional reactions depend on their subjective evaluation, or appraisal, of an experience (Lazarus & Folkman, 1984). Jenkins et al. (2014) found that a loss of self-esteem was the biggest factor causing grief after experiencing firm failure. Loss of self-esteem indicates that an individual feels that they have personally failed in a domain in which they have risked their self-worth (Crocker & Wolfe, 2001), meaning that entrepreneurs with low self-esteem attributed their firm's failure to personal failure. This finding can, therefore, help identify when firm failure is also experienced as a personal failure, hindering an individual's ability to recover from the failure.

2.1.3 Motivational factors of learning from failure

2.1.3.1 Motivation to learn

Zhao (2011) found a positive association between negative emotionality and motivation to learn. She argues that perceived failure coupled with managerial intolerance of failure can induce an individual's negative emotion that in turn decreases the individual's motivation to learn from failure. She conducted a lab study with 127 undergraduate students where a

simulation software was used to test participants' managerial performance based on their ability, through trial and error, to assimilate and respond to each task in turn.

2.1.3.2 Attribution

Kelley (1973) defined attribution theory as a theory about how people make causal explanations (i.e., how they answer questions beginning with “why”). In the context of learning from failure, individuals attribute the cause of failure either to themselves (internal attribution) or to others (external attribution). Causal attribution influences how much the individual learns from the failure event. Chuang et al.'s (2007) theoretical model combined multiple levels of learning where the characteristics of the events, group composition, and dynamics, and the behavioral and structural arrangements of health care organizations were proposed to play important roles in a circular process of learning. The circular process of learning starts with knowledge flows from the individual to the group to the organizational level. Then, what has already been learned feeds back from the organization to the group and to individuals. Attribution is important, as Chuang et al. (2007) show, because individuals who attribute negative outcomes to themselves are more likely to take appropriate steps to improve future performance or to prevent the reoccurrence of a negative outcome, whereas individuals who attribute negative outcomes to others (i.e., blame the organization or administration) are less likely to respond positively to negative outcomes (i.e., not learn from failure). Following is a discussion of studies that provide empirical evidence of this.

Eggers and Song (2015) found that entrepreneurs from China and the U.S. responded with specific behaviors to failure, depending on what they attributed their failure to. They found that serial entrepreneurs who had had a previous venture fail were likely to attribute the cause of failure to the external environment and change industries for their subsequent venture. They

argued that this industry change was costly for these entrepreneurs because it invalidated potentially useful industry experience, thereby hindering the success of their subsequent venture. They also found that when starting a subsequent venture, entrepreneurs who had previously failed were unlikely to change aspects of their previous business that would be attributable to their leadership (e.g., strategy, decision-making, and planning style). This indicates that entrepreneurial failures tend not to be attributed to the self but to the external environment. This can negatively affect one's ability to learn from failure experience and thereby affect subsequent performance.

Dillon and Tinsley (2008) found from their experimental study of NASA students and personnel that organizations and managers fail to learn from near-misses (when an adverse event almost happens) because they evaluate and attribute such events as successes and thus feel safer about the situation. Attributing near-misses as success meant that managers whose decisions led to a near-misses was evaluated more favorably than managers whose decisions resulted in a failure. The negativity that accompanies failures has long proven to be a challenge.

Jenkins (2012) studied the learning process as a link between the nature of the attribution of entrepreneurial failure and the type of reflection that was likely to take place after failure, among Swedish owner-managers who filed for bankruptcy. Jenkins suggested that the nature of what was reflected upon forms the foundation learning, either double-loop learning or single-loop learning. Single-loop learning is a repeated attempt to address the failure with no variation of method, whereas double-loop learning involves a change in mental models to understand the failure and the decisions on how to resolve it, thus ensuring a higher chance of recovering from the failure. She found that the more the entrepreneurs thought that they were the cause of the failure and the greater the personal control they thought that they had over the

attribution, the more likely it was that they reflected on their contribution to the failure. This created possibilities for double-loop learning. In contrast, single-loop learning meant that the more the entrepreneur thought that the causes of the failure were related to the situation or other people, the more likely they were to reflect on the situation or others contributing to the failure.

To summarize, scholars have found that learning from failure generally takes places when there have been past experiences of failure, whether one's own or others'. They have categorized this experience as either direct or indirect learning. Also, how one attributes the event, whether as a failure or success, internal or external, has an impact on how one learns from that event.

2.1.3.3 Recovery from failure

Learning from failure can be demonstrated through recovery from failure, as the recovery process involves understanding what went wrong (whether a personal flaw or a process error), knowing how to change one's behavior, and resurfacing from the fall. Cope (2011) studied the process of learning from venture failure and suggested that the recovery process of venture failure can be seen as two stages: recovery and re-emergence from failure. Cope's (2011) qualitative research demonstrated that entrepreneurs learn not only about themselves and the demise of their ventures but also about the nature of networks and relationships and the pressure points of venture management. Learning that comes post-failure is future-oriented, increasing the entrepreneur's level of entrepreneurial preparedness for further enterprising activities.

Similarly, Stokes and Blackburn (2002) examined attitudes to, and lessons learned, from failure in the context of business closures. Using interviews and surveys, they found that entrepreneurs encouraged by a failure to continue as business owners usually saw failure as a

positive learning experience and tended to recover from failure. The most significant learning was related to personal management—coping with setbacks, self-management, and adapting to change. Learning about trust and relationships was also significant after failure. Entrepreneurs felt better equipped and motivated to start another venture) because of lessons learned after failure (indicating recovery).

To summarize this section, recovery from failure entails learning about oneself and the networks one has surrounding the job, both of which encourage re-emergence from failure.

2.1.3.4 Performance management

Demonstrating performance improvement is another indication that a person has learned from failure. Shepherd et al. (2011) measured learning from failure to determine an individual's progress in moving forward from project failure and found that such learning increased as the time since a project failed increased. Earlier I discussed how individuals who attribute their failure to external factors learn less from their own failures. Shepherd et al. (2011), however, also introduce the aspect of time and how it affects learning from failure. Time appears to lead to a change in attribution (Lau, 1984; Pronin & Ross, 2006) through a change in perspective. Because time distances past events from people remembering it, they generally perceive the event as if they were an external observers instead of participants (Libby & Eibach, 2002; Nigro & Neisser, 1983). In the context of failures, such a perspective leads them to attribute their failure to internal sources (Frank & Gilovich, 1989) and, thus, to take more personal responsibility for the outcome (Pronin & Ross, 2006). This change in attribution provides greater opportunities for learning. Shepherd et al. (2011) argue that learning emerges from the interplay of action, interpretation, and reflection over time. These reflections over time can provide insights that lead to changed beliefs and lessons learned from failure. In their study,

Shepherd et al. measured learning from failure as “project related learning” and “personal learning,” both of which lead to performance improvement (p. 1239). Shepherd et al. (2011) also found that individuals with a stronger loss orientation showed higher levels of learning from failure after their project failure. (Loss orientation refers to working through and processing aspects of a loss to break the emotional bonds to the object lost [Stroebe & Schut, 1999]). They argue that this coping orientation requires individuals to focus on the events leading up to a project’s failure to construct an account of why the project failed. Considering the reasons for the project failure can provide valuable learning opportunities, thus increasing the possibility of learning from the failure. In addition, they argue that uncovering the reasons why a project failed can increase an individual’s search for information about alternative actions that could have been taken and to modify their belief systems in future projects.

Many of the studies I have discussed in this review show the combination of different factors and how each factor has an impact on learning from failure. Zhao (2011) found in her study that negative emotionality can motivate learning, which leads to performance improvement. Zhao’s (2011) findings that failures motivate learning behaviors was echoed in Deichmann and Ende’s (2013) study. They used 1,792 radical ideas suggested by 908 employees in a multinational firm’s idea and innovation program to study taking initiative and subsequent initiative success as two important and observable outcomes of learning. They assumed that prior experiences of success would increase subsequent initiative taking and that failure, or failed initiatives, would have negative repercussions (like lowered self-esteem, feeling of helplessness) and diminish efforts to try again. However, they found the opposite to be true. Failure, rather than success, increased the likelihood of repeat initiative taking (measured as putting forth a radical idea every four years). Deichmann and Ende (2013)

describe initiative taking as “radical or disruptive ideas” that are different from earlier initiatives and which can lead to fundamental changes in the organization (p. 670). This suggests that prior experience of failure contributes to an individual’s future learning and idea generation.

To summarize, there are several contextual and individual factors that influence an individual’s motivation to learn. Namely, prior experiences of failure, psychological safety at work, and participating in AERs all increase the likelihood of being motivated to learn from failure. Individuals who are highly committed to their work tend to cope better with their failure and can regulate their emotions in a manner that encourages learning from failure. Also, job autonomy increases motivation to learn from failure. Motivation to learn is fueled by failure. Researchers also indicated that the experience of failure can be direct or indirect and that how learning occurs depends on what the individual attributes the success or a failure to, and on what level. These contextual and individual factors have led to various outcomes of individual learning from failure, such as recovery strategies and performance improvement. All of these findings serve as a solid foundation for our understanding of learning from failure. The literature implicitly assumes that failure is known to others or has been shared with others. However, this means researchers do not know why failure is shared, with whom is it shared, and the outcomes of sharing failure with others.

In the next section, I review knowledge sharing literature and discuss the gaps in the current literature on both learning from failure and knowledge sharing.

2.2 Knowledge sharing

It is important to discuss how “knowledge” and “knowledge sharing” are defined in the literature. Davenport and Prusak (1998) defined knowledge as “a fluid mix of framed experience, values, contextual information, and expert insights that provides a framework for

evaluating and incorporating new experiences and information. It originates in and is applied in the minds of knowers” (p. 5). Nonaka and Takeuchi (1995) defined knowledge as “a dynamic human process of justifying personnel belief toward the truth” (p. 58). The knower makes meaning of a message by the interaction of their values and past experiences. Knowledge is distinct from information in that knowledge is about the knower and how they interpret information, as opposed to information, which is about facts about a particular issue.

Knowledge sharing among individuals refers to the process by which “knowledge held by an individual is converted into a form that can be understood, absorbed, and used by other individuals” (Ipe, 2003, p. 341). The use of the term “sharing” implies that knowledge sharing involves conscious action on the part of the individual who possesses the knowledge.

Huber (1991) stated that the concept of knowledge sharing is both knowledge distribution and knowledge acquisition. The voluntary act of sharing knowledge by an individual contributes to knowledge distribution, and the process of sharing can result in knowledge acquisition by other individuals within an organization. Knowledge sharing among individuals thus results in individual learning, which in turn contributes to organizational learning.

Leistner (2010) explains that shared knowledge needs to be re-created in the target’s mind, that is, the target needs to make sense of the new knowledge in order to use it. The sharer usually learns something every time they formulate information for sharing (Leistner, 2010).

Because knowledge resides in the individual, it can be difficult to share this knowledge. Consequently, lack of knowledge sharing has proved to be a major barrier to the effective management of knowledge in organizations (Davenport & Prusak, 1998; Hendriks, 1999). Many scholars have tried to understand the “stickiness” of knowledge, or what is it about the

nature of knowledge that makes sharing it so challenging. Von Hippel (1994) defined “stickiness” as the incremental expenditure involved in moving knowledge in a form that is useable and easily understood by the information seeker. Stickiness for the knowledge supplier comes from the tacitness of the knowledge that has to be shared, whereas stickiness for the knowledge user comes from his own absorptive capacity of the new knowledge. Therefore, the tacitness of knowledge is a natural impediment to the successful sharing of knowledge among individuals in organizations (Von Hippel, 1994).

Liu and Liu (2008) stated that the sticky nature of knowledge means that knowledge sharing among individuals is slow, costly, and uncertain. This then negatively impacts knowledge sharing, thus the phrase “stickiness of knowledge sharing.” Liu and Liu (2008) found in their study of high-tech companies in Taiwan that most employees prefer to acquire knowledge from, and share knowledge with, their team members in order to reduce the stickiness of knowledge. This implies that greater familiarity among team members and strengthened cooperative relationships foster productivity. Furthermore, employees should be encouraged to participate in professional communities in order to acquire new knowledge. Knowledge acquired via these channels will facilitate the sharing of R&D knowledge within an organization.

There is a common assumption that knowledge resides in the individual and is interpreted by the holder based on their past experiences and beliefs. The notion that knowledge is power has led to studies that assume that knowledge is a firm’s competitive advantage. Such an assumption can lead to an adaptation of the firm’s rewards system and job design. Individual-level factors that enable knowledge sharing are trust in others, motivation to share, altruism, and reciprocity. However, if top management does not manage employees’ knowledge

sharing expectations and behaviors, knowledge guarding, knowledge hiding, resistance to knowledge sharing, and even lost of knowledge when an employee leaves the organization could be the result.

Knowledge sharing as a research topic has gained popularity over the years as organizations begin to see the competitive advantage that knowledge brings (Boland & Tenkasi, 1995; Cohen & Levinthal, 1990; Davenport, 1997; Hendriks, 1999; Nidumolu, Subramani, & Aldrich, 2001). Current knowledge sharing literature can be summarized as five main categories: the contextual factors of knowledge sharing, individual factors of the sharer (and recipient), motivation to share knowledge, behaviors of not sharing knowledge, and outcomes of knowledge sharing. Each of these categories will be discussed in the next sections (see Figure 2 below).

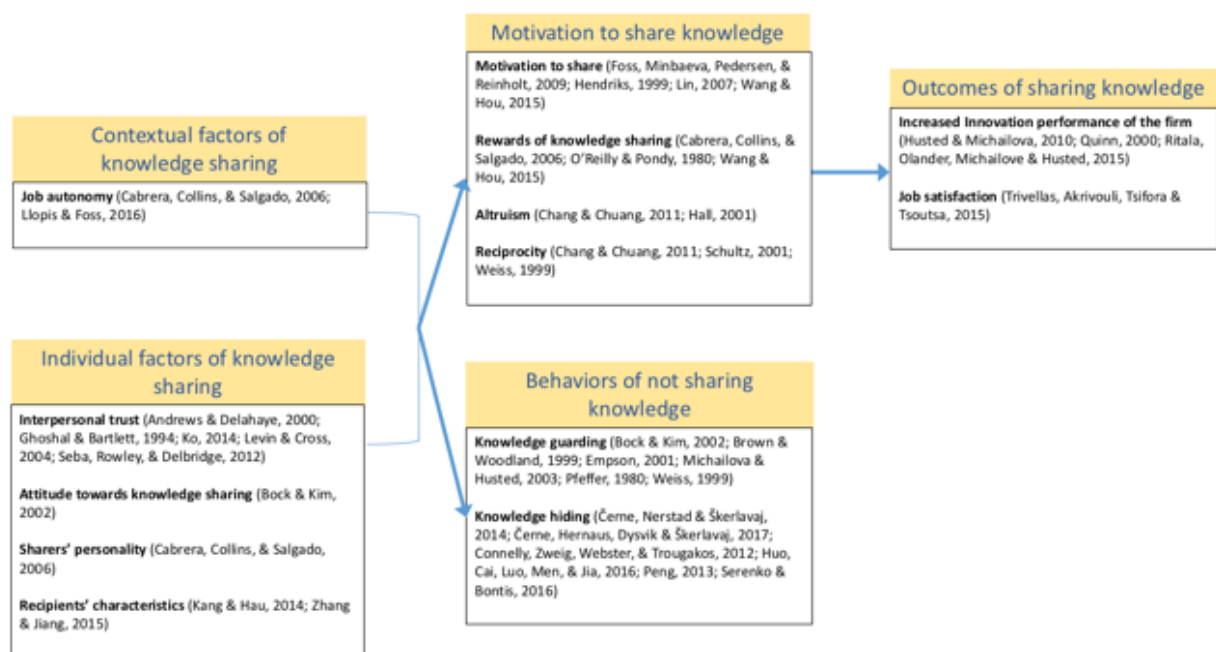


Figure 2: Knowledge sharing on the individual level: Literature review

2.2.1 Job Autonomy as a contextual factor of knowledge sharing

Job autonomy is of interest to researchers as it is a significant predictor of job performance (Fried, 1991; Hackman & Oldman, 1976). Cabrera, Collins, and Salgado's (2006) exploratory study using survey data from the multinational information technology and services industries, examined how job autonomy is related to employees' participation in knowledge sharing. They argued that an individual's inclination to share knowledge with others is related to the degree of responsibility that is felt by the individual for their work. However, they only found autonomy to have an indirect impact on knowledge sharing.

Llopis and Foss (2016) gathered data from a sample of 170 employees of a knowledge-intensive firm to investigate the effects of job autonomy on knowledge sharing. They argued that employees who have more job autonomy have more opportunities to engage in knowledge sharing. Their assumption is that in organizations with a high cooperative climate (defined as organizational norms that emphasize personal effort toward group outcomes), job autonomy will boost knowledge-sharing behavior. They found that the social climate for cooperation better predicts knowledge sharing when employees show low levels of intrinsic motivation and have high levels of job autonomy. This suggests that a cooperative climate and intrinsic motivation are equally important with respect to their impact on knowledge-sharing behaviors, while climate and job autonomy are supplemental. Both Cabrera et al. (2006) and Llopis and Foss (2016) found that job autonomy, although it has a positive impact on knowledge sharing, is not as salient as other factors such as motivation.

2.2.2 Individual factors related to knowledge sharing

Contextual factors of knowledge sharing are not be enough to motivate an individual to share knowledge with others. Studies have also identified several individual factors that

contribute to knowledge sharing. These include interpersonal trust, attitude towards knowledge sharing, the sharer's personality, as well as the recipients' characteristics.

2.2.2.1 Interpersonal trust

Since knowledge can be seen as a personal possession (i.e., the knowledge holder owns the knowledge), sharing it means that the sharer values the knowledge, the recipient, and their relationship. Interpersonal trust between the sharer and recipient has an impact on the sharer's motivation to share knowledge. Ghoshal and Bartlett's (1994) longitudinal field study in a company that bounced back from bankruptcy found that organizations that are able to establish trust, discipline, and support as attributes of their context, motivate and enable voluntary cooperation among individuals that are aligned with the organizations' objectives and interests. They argued that cooperation and trust coexist in a symbiotic relationship, as trust in the organization led to better compliance with organizational needs of knowledge sharing. Therefore, an organization that encourages cooperation among individuals tends to implement practices that strength trusting relationships among workers. This trust sets the context for knowledge sharing.

The importance of trustworthiness to knowledge sharing in organizations is further reinforced by Andrews and Delahaye (2000), who found that the role of trust was central to the way knowledge was shared by individuals. Their study established that in the absence of trust, formal knowledge-sharing practices were insufficient to encourage individuals to share knowledge with others in the work environment. This is because trustworthiness, based on perceptions of what colleagues were likely to do with sensitive information, was the factor that influenced knowledge- sharing decisions.

Levin and Cross (2004) investigated the effects of strong and weak ties on the usefulness of knowledge transfer. Knowledge transfer is defined as the dyadic exchange of organizational knowledge between a source and a recipient (Szulanski, 1996). They were particularly interested in the role of trustworthiness as a mechanism in which strong ties enabled learning. Levin and Cross (2004) defined trustworthiness as the “quality of the trusted party that makes the trustor willing to be vulnerable” (p. 1458). The strength of ties characterizes the closeness and interaction frequency of a relationship between two parties (Hansen, 1999). Weak ties denote less frequency of interaction between two parties, whereas strong ties mean a shorter distance and higher frequency of interaction between two parties. Levin and Cross (2004) argued that strong ties lead to greater knowledge transfer because individuals with strong ties are more likely to expend effort ensuring that a knowledge seeker sufficiently understands and can put into use newly acquired knowledge. Therefore, strong ties lead to the receipt of useful knowledge. They also argued that trustworthiness mediates the relationship between strong ties and the receipt of useful knowledge. This is because strong relationships tend to be trusting, and trusting a knowledge source to be benevolent and competent increases the chance that the knowledge receiver will learn from the knowledge transfer. However, from a social network theory point of view, Levin and Cross (2004) argued that weak ties, more than strong ties, when in a trusted relationship, result in more useful knowledge to the knowledge seeker. This is because weak ties are less likely to result in redundant information (Burt, 1992), meaning information that overlaps with what the knowledge receiver already knows. They based their findings on a sample of employees in an American pharmaceutical company, a British bank, and a Canadian oil and gas company.

Ko (2010) investigated the role of trust and knowledge transfer in the context of project teams. His field survey of consultant-function specialist dyads found that consultants were typically hired for their expertise in a domain (e.g., their competence trust). However, benevolent trust influenced the success of an effective transfer of knowledge. Ko (2010) defined benevolent trust as trust that is largely based on emotional bonds, whereas competence trust is largely based on work ability and responsibility. Ko (2010) argued that in the context of long-term engagements (such as a consultant-client relationship), benevolent trust is important for keeping the relationship functional and to avoid conflict. He found that benevolent trust influences knowledge transfers while competence trust does not. In other words, trustworthiness on the basis of sentiment and honesty between knowledge providers and recipients affects a knowledge recipient's ability to effectively learn and apply newly acquired knowledge. In an earlier study, Levin and Cross (2004) found a positive relationship between competence trust and knowledge transfer. However, Ko (2014) found no significant relationship. One possible explanation for the contrasting finding is that Ko (2014) focused on long-term relationships and argued that benevolent trust outweighs competence trust when it comes to individuals helping one another accomplish long-term goals. Such long-term relationships also require a higher level of interaction and communication and also benefit from benevolent trust.

Seba, Rowley, and Delbridge (2012) qualitatively investigated knowledge sharing in the Dubai police force and found that trust among employees is considered to be a very important factor in encouraging employees to share knowledge. They argued that trust leads to increased knowledge sharing, as it makes knowledge sharing less costly and increases the likelihood that knowledge acquired from a fellow employee is sufficiently understood. Trust is especially

important in the Arab culture as it is more important to build a relationship than to solve a problem.

2.2.2.2 Attitude towards knowledge sharing

Bock and Kim (2002) found that a positive attitude toward knowledge sharing leads to a positive intention to share knowledge and eventually to actual knowledge-sharing behaviors. In their study, they used social exchange theory to explain why social exchange tends to engender feelings of personal obligation, gratitude, and trust. They found that if individuals believe they can improve a relationship with another person by offering their knowledge, they develop a positive attitude toward knowledge sharing.

2.2.2.3 Sharer's personality

Cabrera et al. (2006) examined three of the five big personality traits (agreeableness, conscientiousness, and openness to experience) and their relation to knowledge-sharing behavior. They found that openness to experience was the most salient variable of the personality traits they studied. They described this openness as a reflection of an individual's curiosity, and it has been shown to be a predictor of seeking other people's insights, which leads to further knowledge sharing.

2.2.2.4 Recipients' characteristics

Zhang and Jiang (2015) examined the influence of knowledge recipients' competence, learning attitude, and personal relationship with the knowledge sharer on the knowledge sharers' willingness to share. The authors conducted two studies, a scenario experimental study and a field survey study, to test their hypothesis. In their studies, they differentiated between responsive and proactive knowledge sharing. They defined responsive knowledge sharing as a situation where a person providing knowledge is asked for help. Such knowledge-sharing

behavior is not planned in advance but is triggered by the recipient's action of asking. For responsive knowledge sharing, the sharer has to decide on the spot whether or not to share knowledge with this specific individual. Proactive knowledge sharing, on the other hand, describes a situation where a person deliberately shares knowledge with another person to elicit further comments or suggestions. In this process, the knowledge-sharing behavior is a proactive action that can be planned in advance by the sharer and allows the sharer to choose the most appropriate knowledge recipients. Zhang and Jiang (2015) found that a recipient's characteristics play a role in triggering the knowledge sharer's motive to share. In responsive knowledge sharing, a recipient's learning attitude and personal relationship with the knowledge sharer affects the sharer's willingness to share, whereas in proactive knowledge sharing, a recipient's professional ability and personal relationship with the sharer significantly affects the sharer's willingness to share.

Kang and Hau (2014) studied knowledge transfer from the perspective of the knowledge recipient. They used social capital and social network theories to examine the recipient's trust in colleagues and its effect on knowledge transfer. They found that a knowledge recipient's high network centrality (defined as interacting with many [Wasserman & Faust, 1994]) positively influenced knowledge transfer. This is because an individual's network centrality is an indication of how much access the individual has to a large range of necessary knowledge. Also, interacting with many people increases an individual's communication skills, which aids in knowledge transfer. As for the knowledge recipient's trust in others, Kang and Hau (2014) argued that individuals who have high levels of trust in their colleagues facilitate knowledge transfers by removing any unnecessary barriers between the knowledge source and the recipient. Their samples from eight R&D groups in five South Korean firms showed that on the dyadic

level, recipients' trust in colleagues positively influenced knowledge transfer. However, a recipient's strength of network centrality had no significant effect on knowledge transfer. A possible explanation for this finding is that even though an individual has high network centrality, the ties may be weak (as opposed to strong ties) and therefore unable to support meaningful knowledge transfers.

2.2.3 Motivation to share knowledge

The bulk of current knowledge-sharing research focuses on the enablers and/or barriers of knowledge sharing in firms. Enablers are factors that increase the chance of knowledge sharing, while barriers are factors that decrease the chance of knowledge sharing. These enablers and barriers can be seen as motives to share, or not share, knowledge.

Several scholars have investigated motivation to share knowledge (Deci & Ryan, 2000; Hendriks, 1999; Foss, Minbaeva, Pedersen, & Reinholt 2009; Lin, 2007; Wang & Hou, 2015). Specific factors that motivate knowledge sharing are the rewards of knowledge sharing (Cabrera et al., 2006; O'Reilly, 1980; Wang & Hou, 2015), altruism (Chang & Chuang, 2011), and reciprocity (Chang & Chuang, 2011; Weiss, 1999).

Wang and Hou (2015) studied the knowledge sharing behavior of 259 employees in 34 organizations in Taiwan: 19 commercial banks, 10 insurance companies, and five securities/financial holding companies. They found that knowledge sharing was positively influenced by the quality of motivation (defined in their study as the degree to which an individual's psychological need for autonomy was satisfied while performing a behavior, their competence in their work, and their relatedness with others), which was generated by tangible rewards (such as financial rewards), soft, or intangible rewards (such as recognition), or altruism for the benefit of the organization. They argued that rewards, both hard and soft, are

central components of a knowledge management initiative and thus tend to have a positive impact on knowledge sharing if the sharer perceives their organizations to benefit from their knowledge sharing.

If one's motivation for knowledge sharing is not high, especially when dealing with tacit knowledge or knowledge that is difficult to codify, why then does knowledge sharing still occur? Deci and Ryan (2000) argue that when a behavior is not interesting or enjoyable for an individual, the main reason the individual performs the behavior is because this behavior is valued by and/or beneficial to significant external entities to whom they feel connected, such as their organization.

Interestingly, Lin's (2007) study of 172 employees from 50 large organizations in Taiwan found that on some occasions, individuals were willing to share their knowledge because they were satisfied with or pleased by the positive results of helping others (i.e., altruism for personal satisfaction). Contrary to Deci and Ryan (2000), Lin (2007) found that motivational factors such as reciprocal benefits, knowledge self-efficacy (defined as confidence in one's ability to provide knowledge that others in the organization consider valuable), and enjoyment in helping others were significantly associated with employee knowledge sharing attitudes and intentions. However, expected organizational rewards did not significantly influence employee attitudes and behavior intentions regarding knowledge sharing. This finding contradicts Wang and Hou's (2015) argument that hard and soft rewards increase knowledge-sharing behaviors at work. Lin (2007) defended his finding by stating that the executives who made up most of his sample (67%) were motivated by objectives other than organizational rewards. These executives considered knowledge sharing with colleagues as an obligation, yet their enjoyment of sharing improved their motivation to share knowledge.

Highlighting the importance of intrinsic motivation for knowledge sharing, Foss et al. (2009), in their on-site study of the Copenhagen site of the German multinational company MAN Diesel, found that job characteristics (autonomy, task identity, and feedback) determined motives to share knowledge, which in turn affected employees' knowledge-sharing behaviors. They found that job design matters to knowledge sharing for motivational reasons. This is because job characteristics that stimulate different kinds of motivation toward knowledge sharing, have different effects on individual knowledge sharing behavior. Foss et al. (2009) concluded that the more intrinsically motivated employees are to share knowledge, the more knowledge they will receive from and pass on to colleagues.

2.2.3.1 Rewards of knowledge sharing

In terms of being rewarded for sharing knowledge, O'Reilly's (1980), using a conceptual model, found that the end result of sharing knowledge influenced people's sharing behavior. In other words, the probability that organizational members will share information with other members is positively related to a reward and negatively related to a penalty that they expect to receive for sharing. O'Reilly's findings have spurred on other scholars to further this study.

Cabrera et al.'s (2006) exploratory study focused on individual variables (personality, self-efficacy, and organizational commitment), individual perceptions of how the organization is managed (job autonomy, rewards associated with knowledge sharing, and support from co-workers and supervisors), and individual perceptions about existing knowledge management systems (availability and quality of the systems). Their sample consisted of individuals from large multinational information technology and services companies. One of the reasons why knowledge management systems do not necessarily create sharing dynamics has to do with the

ineffective reward system that is in place; people may be better off hoarding than sharing what they know. They argued that the greater the value of an outcome, the stronger the positive link between the reward and voluntary participation. In this case, to encourage knowledge sharing, organizations should re-evaluate their reward systems to make sure that they are sending the right message to their employees.

2.2.3.2 Altruism

Hall (2001) concludes that individuals are willing to share their knowledge because they are satisfied or pleased by seeing the positive results of helping others (i.e., being altruistic for personal satisfaction). Being altruistic for personal satisfaction involves an individual's desire to pursue personal knowledge growth and is thus positively associated with their knowledge sharing intentions.

On the same note, Chang and Chuang's (2011) study of knowledge sharing in virtual communities in Taiwan revealed that when individuals develop a sense of belonging to a virtual community, they are likely to share visions or goals with other community members. Therefore, they tend to increase their altruistic knowledge-sharing behaviors because helping other members pleases them (i.e., being altruistic for personal satisfaction) as does seeing the results of the shared vision or goals (i.e., being altruistic for the sake of the organization). This altruistic behavior in a community could be related to the expectation that others will do the same for you, which leads to reciprocity, the focus of the following section.

2.2.3.3 Reciprocity

Weiss (1999) showed that reciprocity, or the mutual give-and-take of knowledge, facilitates knowledge sharing if individuals see that they are more highly valued if they share their knowledge with others. Schulz (2001) also identified this form of future reward in his

study of subsidiaries of U.S. parent companies in Denmark and subsidiaries of Danish parent companies in the U.S. Reciprocity, in Schulz's (2001) study, as a motivator of knowledge sharing, meant that individuals must be able to anticipate that sharing knowledge will be beneficial to them (i.e. they will receive knowledge back) before engaging in knowledge sharing. Similarly, Chang and Chuang (2011) found that in the virtual community they studied, knowledge sharing was facilitated by reciprocity. Members of the online community weighed the invested efforts in knowledge sharing, and if the efforts could be reciprocated, members were motivated to contribute more. This indicates that reciprocity is a motivator of knowledge sharing on the individual level in different contexts, such as the workplace or an online community.

2.2.4 Behaviors of not sharing knowledge

Researchers have also identified various behaviors of not sharing knowledge: knowledge guarding (Bock & Kim, 2002; Weiss, 1999) and knowledge hiding (Černe, Hernaus, Dysvik, & Škerlavaj, 2017).

2.2.4.1 Knowledge guarding

Knowledge guarding is when a knowledge holder intentionally chooses not to reveal that they possess knowledge and, therefore, they do not share that particular piece of knowledge with others. Bock and Kim (2002) found in their field study of 467 Korean employees of four large public organizations that if an individual possesses knowledge that is valuable to him or herself, the individual will be unlikely to share it with others, to maximize personal benefits. These personal benefits included increased job security and holding a unique and important position in the organization. Such a mentality is typical of a knowledge intensive environment where knowledge is seen as a competitive advantage. Bock and Kim (2002) argued that

knowledge sharing is a kind of social interaction among people and that people choose not to share knowledge with others if they think the cost of sharing will exceed the reward.

Similarly, Weiss's (1999) extensive fieldwork in professional service firms (law firms, investment banks) found that professionals tended to guard their knowledge because they thought that their own value in the firm was a product of the knowledge they possessed. Weiss (1999) argued that knowledge and how it is managed is a key source of competitive advantage in knowledge-intensive firms. In the context of a professional service firm, knowledge is embedded within individuals (intangible knowledge). Sometimes knowledge is easily identified and retrieved and will circulate freely because there is support (such as technology to help disperse knowledge). Other times, certain people in an organization treat knowledge as a commodity to be guarded and do not surrender their knowledge freely.

On the same note, Empson's (2001) qualitative study of six accounting and consulting firms showed that in organizations in which an individual's knowledge is their primary source of value to the firm, sharing this knowledge potentially results in diminishing the value of the individual, creating a reluctance to engage in knowledge-sharing activities.

A negative aspect of reciprocity is the fear of exploitation, which was found to be a serious threat to knowledge sharing among individuals in Empson's (2001) study where participants were in the middle of either a company merger or acquisition. Empson (2001) also uncovered the fear of exploitation as a reflection of extreme anxiety that individuals experience when they think that they are being asked to give away valuable knowledge with very little or no benefit to them in return. Empson concluded that the professionals in his study resisted knowledge sharing when they thought that the merging firm differed fundamentally in terms of the quality of its external image and the form of its knowledge base from their firm.

Brown and Woodland's (1999) case study of a pharmaceutical firm in which the sole senior R&D personnel was set to retire, showed that knowledge needs to be managed wisely, both by individuals and the organization. In their study, individuals used knowledge to maintain their power and for self-defense as the organization was about to lose its key R&D personnel along with his knowledge. The researchers argued that the lack of management learning and planning led to senior employees resisting sharing knowledge with junior employees.

Similarly, Pfeffer (1980) suggested that in a competitive environment, withholding knowledge from those considered competitors is often regarded as useful for attaining one's goals. This is again based on the underlying assumption that knowledge is power and therefore by withholding knowledge from competitors, individuals can protect their own assets.

Davenport (1997) also warned that if individuals believe that their power comes from the knowledge they possess, they will likely guard their knowledge instead of sharing it. Not only is knowledge sharing dependent on the willingness to share knowledge, the process of knowledge sharing is also made more difficult by the sticky nature of knowledge.

2.2.4.2 Knowledge hiding

Knowledge hiding is defined as an intentional attempt to conceal or to withhold knowledge that others have requested (Connelly, Zweig, Webster, & Trougakos, 2012).

Knowledge hiding differs from knowledge guarding in that knowledge has been requested but is intentionally not shared, whereas knowledge guarding is less specific in its definition and generally refers to not sharing knowledge. Connelly et al. (2012), in their theoretical article, explain that knowledge hiding is different from not sharing knowledge because, in addition to the omission of knowledge sharing, it incorporates an intent to withhold knowledge that someone else has requested.

Based on Connelly et al.'s (2012) conceptualization of knowledge hiding, Černe, Nerstad, Dysvik, and Škerlavaj (2014) investigated the effects of motivational climate and trust on knowledge hiding at work. Their survey samples were employees and their supervisors in two manufacturing companies in Slovenia, and they also conducted an experimental study with university students. Černe et al. (2014) argued that individuals whose requests for knowledge at work were rejected, were likely to reciprocate and hide knowledge in return. They called this a reciprocal distrust loop. The same arguments mentioned earlier with regards to reciprocating knowledge sharing can also be applied to knowledge hiding. When a coworker is denied knowledge and they are able to recognize intentional knowledge hiding, distrust is created. In turn, such acts within a coworker dyad trigger ineffective social exchanges, in other words, reciprocated rejections of assistance or knowledge disclosure (Blau, 1964). Černe et al. (2014) found that the reciprocal distrust loop applied to situations both in their field study as well as their experimental study.

Serenko and Bontis (2016) extended Černe et al.'s (2014) study to explore whether three types of facilitating conditions (organizational KM systems, policies, and culture) and job insecurity had an effect on intra-organizational knowledge hiding. In addition, they empirically tested two outcomes of intra-organizational knowledge hiding—reciprocal knowledge hiding and voluntarily turnover. Here, intra-organizational knowledge hiding is defined as the “deliberate attempts of employees to withhold or conceal their knowledge when it was requested by their fellow colleagues” (Serenko & Bontis, 2016, p. 1202). Using social exchange theory as the basis of their argument, Serenko and Bontis (2016) suggested that reciprocation takes place not only when actions are positive but also when they are negative, such as knowledge hiding. Thus, when an individual realizes that they have been intentionally denied

knowledge by a colleague, they retaliate (reciprocate) by also hiding knowledge. Their sample of 691 employees of 15 North American credit unions showed that individuals tend to perceive their own knowledge hiding behavior as less problematic than their colleagues'. This means that individuals underestimate their own knowledge hiding behavior and overestimate their colleagues' knowledge hiding behavior.

Černe et al. (2017) asked when and how interactions of three types of antecedents (team climate [mastery level], job design [job autonomy], and individual behavior [knowledge hiding]) lead to varying levels of innovative work behavior (IWB). They used Shipton, Sanders, Bednall, Lin, and Escribá-Carda's (2016) definition of IWB: the initiation and the intentional introduction of new problem-solving ideas and solutions, thereby enhancing a product, service, or process. Černe et al. (2017) argued that knowledge hiding is equally, or more, important to innovation implementation than to idea generation because implementation efforts entail selling the idea, convincing others of it, and synthesizing it (Baer, 2012). Hiding knowledge is likely to result in low interpersonal trust which then negatively impacts individual IWB (Baer, Evans, Oldham, & Boasso, 2015). Baer et al.'s (2015) sample of 240 employees and their 34 direct supervisors in two medium-sized Slovenian manufacturing companies showed that individuals who felt that they worked within an environment that valued learning and mastery (emphasis on individual learning), and where their work efforts were appreciated, evinced more IWB. Interestingly, they found that employees in teams high in mastery climates who hid knowledge exhibited the highest levels of IWB when their tasks did not require them to frequently collaborate with others. This means that those who hide knowledge can still be an asset to an organization if they are given greater job autonomy.

Huo, Cai, Luo, Men, and Jia (2016) examined why individuals hide their knowledge in R&D teams. They defined and measured knowledge hiding using the 12-item scale developed by Connelly et al. (2012). Their sample of Chinese undergraduate students at research institutions showed that territoriality plays a mediating role between psychological ownership and knowledge hiding. Psychological ownership, as defined by Pierce and Rodger (2004), refers to a perception of ownership over a particular object (tangible or intangible). In the context of R&D teams, knowledge is the main competitive advantage individuals have, and therefore, they feel that their knowledge is their personal psychological property. Following this logic, Huo et al. (2016) argued that in order to increase their worth in the organization, individuals control their knowledge by hiding it. Territoriality is defined as the behavioral expression of individual members based on their perceived ownership of psychical or social objects, which they then protect as their own (Brown, Lawrence, & Robinson, 2005). Psychological ownership theory states that if an individual experiences strong psychological ownership of knowledge (intangible object), the knowledge tends to be an extension of themselves (Peng, 2013). Therefore, when individuals feel strongly that they own knowledge, they display strong territoriality over that knowledge, which leads them to protect their knowledge by hiding it.

2.2.5 Outcomes of sharing knowledge

In the following sections I discuss the outcomes of knowledge sharing. Knowledge sharing literature have focused on studying the outcomes in terms of performance and job satisfaction of individuals.

2.2.5.1 Increased innovation performance of the firm

Studies at the organizational level tend to look at performance outcomes of knowledge sharing in terms of innovation. Ritala, Olander, Michailove, and Husted (2015) found that

external knowledge sharing (with people outside the organization) and firm size have a positive effect on the innovation performance of the organization. Some researchers have suggested that firms that share knowledge with external partners send a signal to other firms (including competitors) that their firm has valuable knowledge (Husted & Michailova, 2010), thus increasing the attractiveness of the firm as a potential collaborative partner in inter-firm projects. Firms that engage in external knowledge sharing are often larger and have more resources, as such external knowledge sharing demands resources and numerous iterations of resources. Such repeated sharing causes firms to learn from their interactions with other firms and increases their ability to share knowledge. Quinn (2000) argued that such repeated sharing and learning from sharing facilitates the development of core competencies necessary for innovation.

2.2.5.2 Job satisfaction

A survey study done on accounting managers in Greece found that employees in a knowledge sharing work environment were more likely to achieve higher job satisfaction and subsequently effectiveness (Trivellas, Akrivouli, Tsifora, & Tsoutsas, 2015). The researchers argue that such a knowledge-sharing work environment facilitates and develops job-related tacit knowledge among members of organizations (i.e., interpersonal relation techniques, communication skills, creativity, and problem-solving skills). Therefore, knowledge sharing among organizational members facilitates the advancement of their individual competencies and collectively creates new knowledge. Knowledge sharing leads to enhanced social capital with several benefits: knowledge sharing refines knowledge created by dialogue among those who possess knowledge, and at the same time, knowledge sharing causes individual learning on the part of those who receive knowledge.

2.3 Gaps in the literature

From the review of the literature on knowledge sharing, it is apparent that the field encompasses factors that motivate knowledge sharing (Wang & Hou, 2015) and also behaviors of not sharing knowledge (Empson, 2001).

Researchers who believe that knowledge is a firm's competitive advantage (Davenport & Prusak, 1998) have largely studied knowledge in a positive light. My research builds on this by focusing on sharing failure. Failure can involve valuable knowledge that helps to modify the know-how related to the process leading to failure, which in turn can improve future performance. Also, knowledge sharing literature provides the researcher with a foundational understanding of sharing behavior. For example, the motivation to share knowledge may be applicable in the context of sharing failure. Target selection for knowledge sharing may also help shed light on who the targets of failure sharing are.

When it comes to learning from failure, literature has focused on the contextual factors of learning from failure (Diwas et al., 2013), individual factors of learning from failure (Zhao, 2011), motivation to learn from failure (Eggers & Song, 2015), and the outcomes of learning from failure (Cope, 2011). The literature implicitly assumes that failure is known to others or has been shared with others. However, this means researchers do not know why failure is shared, with whom is it shared, or the outcomes of sharing failure with others. Knowing these would help us elucidate the field of failure sharing.

In sum, by combining these two streams of literature, I aim to draw on the foundational understandings of knowledge sharing and pair that with understandings of learning from failure, to fill the gaps in the literature. This study aims to do so in several ways. Firstly, by focusing on

failure. There has been an increase in interest of knowing more about failures and how it can be useful for purposes of learning (Zhao, 2011).

Learning from failure literature has operated on the implicit assumption that failure is shared. However, scholars have not yet explored the motivations behind such sharing. The literature provides much information on the source of learning, for example, learning from direct experience versus indirect experience (Haunschild & Sullivan, 2002). However, how were these failures known in the first place? Someone must have shared them or made this information known to others, but why did they share them? This leads to the first research question: “Why do individuals share their failures with others?” Knowing that failure has the potential of harming one’s image/reputation, on the surface, sharing failure appears to be counter-intuitive. Therefore, this question of why individuals share their failure with others is intriguing.

Next, who the target of failure sharing is has not been explored in the literature. Scholars have mostly looked at learning from failure from the sharer’s perspective, but scholars do not know much about the receiver, or target, of failure sharing. This leads to the second research question: “With whom do individuals share their failure and failure experiences?” We have seen from the literature that sharing failure can be complex and risky (i.e., the sharer’s reputation can be damaged). Hence the need for a sense of safety when sharing (Carmeli & Gittell, 2009). Therefore, it is important to know who the target of sharing is and what led the sharer to choose this particular target.

By identifying the sharing target, this study aims to also answer the third research question: “What do individuals learn from sharing their failure?” The literature also does not touch upon how individuals learn from sharing failure, which will be explored in this study.

3 Research Methodology

The purpose of this chapter is to explain the choice of research design and why it is suitable for this study and its research questions, how research was conducted, and how data was collected and analyzed. This chapter will begin with a brief background discussion of the qualitative research methodology. This is followed by a discussion of the research context, informants, data collection tools, data analysis, ethical considerations, credibility and trustworthiness of the study, and finally, the limitations of this research design.

3.1 Ontological and epistemological paradigm

This study relies on the ontological stance of interpretivism. A theoretical stance is a statement of the “assumptions brought to the research task and reflected in the methodology as we understand and employ it” (Crotty, 1998, p. 7). Since this study is about exploring the experience of sharing failure (the motivation of sharing failure, who individuals share failure with, and what they learn from sharing failure), interpretivism is particularly suitable because it deals directly with informants’ lived experiences as they unfold in the natural setting (Denzin, 1989). This interpretivist ontological stance sees the informants as agentic actors (people are active agents who design and modify their own lives) and allows the researcher to explore their subjective experiences. The task of the interpretive researcher is, therefore, not to discover an external and objective reality, or “truths,” rather, the researcher is herself the main instrument through which data relating to the core of human experience is collected and analyzed.

3.1.1 Abductive research process

This study adopts an abductive process, which is intended to help the researcher make new discoveries in a logically and methodologically ordered way. Specifically, the research questions and analysis are driven by prior research in learning from failure and knowledge

sharing literature. Upon developing the research questions, I collected data based on them and then used the data to answer the research questions. The data suggested that certain frameworks and concepts would be helpful to explain the data. For example, the theory of self-disclosure was used as a “sensitizing device” to help inform (though not restrict) data analysis (Duberley, Cohen, & Mallon, 2006, p. 1133). It is important to note that I used these conceptual frameworks as sensitizing devices rather than theory to be empirically tested. In so doing, this theory provided a useful lens to examine and understand individuals’ experiences of sharing failure. An explanation of how the theory of self-disclosure was used as a sensitizing device will follow.

The theory of self-disclosure suggests that self-disclosure is a fundamental mechanism by which people manage their relationships at work (Omarzu, 2000). Disclosure of personal information has been studied mostly in psychology and has been linked with the concept of liking (Cozby, 1972) and impression management (Leary & Kowalski, 1990). Self-disclosure research has mainly focused on the strategies behind disclosure behavior (Derlega & Grzelak, 1979; Jones & Pittman, 1982; Miller & Read, 1987). Scholars have found that individuals disclose positive information about themselves to enhance their image (Omarzu, 2000). This accords with the theory of self-disclosure, where individuals want to disclose information to others only when they see a benefit of doing so. It was, therefore, interesting to study why individuals choose to disclose negative information (failure) about themselves. Still, the literature reveals a limited understanding of the process of failure sharing. Therefore, an exploratory methodology allowed me to gain a composite and in-depth view of how individuals experience sharing failure. This is only one example of how I used theory to help guide my research design and analysis. Other frameworks/concepts that were used include impression

management, trustworthiness, and psychological safety. These would be further explained in chapter 7, Discussion.

3.2 Research context

The purpose of this study is to examine the experience of sharing failure at the individual level. Thus, it is important to set this study in the context of organizations in which employees frequently encounter failure at work. I chose high-tech firms and in particular, their R&D departments, where software engineers and developers comprise the majority of the workforce. The high-tech industry is characterized by high rates of failure due to the nature of its unpredictable and highly complex R&D processes (Chandrasekaran, Linderman, & Schroeder, 2015). Such a context is an “extreme example” of the phenomenon of sharing failure and provides the potential to illustrate its full range of manifestations (Moch & Gates, 2000).

The R&D process of a high-tech firm is particularly challenging and one that is highly prone to individual failure for several reasons: projects usually involve individuals taking responsibly for their individual portions; most decisions in these projects lack the physical attributes (such as height, depth, breadth, and mass) that more readily lend themselves to visualization, verification, and communication of the projects they work on. Many decisions in these projects involve significant uncertainty, and the decisions are often mutually dependent (i.e., a decision in one part of the project has implications across many other parts of the project). All of these aspects of R&D projects leave room for high rates of failure. This study is particularly interested in failure sharing at the individual level, making the high-tech industry a suitable context to study the phenomena of failure sharing at work.

I conducted my research in Shanghai, China. There are two main high-technology parks in the city of Shanghai; Zhangjiang Hi-Tech Park, located in the Pudong New District of

Shanghai, and Caohejing Hi-Tech Park, located on the opposite side of the megacity. The largest of the two is Zhangjiang Hi-Tech Park, and within it are clusters of firms that specialize in multiple areas of research, such as life sciences, software, semiconductors, and information technology. Specifically of interest to this study is its high concentration of high-tech multinational corporations (MNCs). Zhangjiang Hi-Tech Park is sometimes referred to as China's Silicon Valley, as it housed more than 110 research and development institutes in 2009. This number continues to rise each year. Some examples of high-tech MNCs that can be found in Zhangjiang Hi-Tech Park include Lenovo, ZTE, and IBM. On a slightly smaller scale, Caohejing Hi-Tech Park specializes in four industries: microelectronics, optoelectronics, computer software and machine, and new materials. This park is also highly concentrated with R&D centers and technical innovation centers. For the purpose of this study, these two hi-tech parks were the locations of the majority of the interviews I conducted.

A total of 32 interviews were conducted in 11 high-tech firms located in and around these hi-tech parks in Shanghai. These firms ranged from large MNCs to local startups, and all of them specialized in software. Software companies employ many different types of employees, and for this study, software engineers and developers were of particular interest as they are the key workers in the R&D departments of these high-tech firms. These software engineers and developers work on multiple projects on any given workday, designing software for mobile technology such as apps for mobile phones, software updates for global positioning system (GPS) machines, and internet apps.

Software engineers are in high demand as every business that generates its own computer programs or needs to personalize third-party software requires software engineers to write, edit, and test programs. There are many layers of computer software, and each requires a

specialist in languages specific to that layer (e.g., C++, Java). Software engineering is a rapidly changing field as it keeps advancing. Therefore, most software engineers engage in continuous learning on the job. Software engineers tend to specialize in a few areas of development, such as networks, operating systems (e.g., iOS, Android), or applications, and each area requires fluency in its own set of computer languages. Software engineers and software developers more or less do the same job, but have different job titles. A software tester is a quality assurance personnel, as their main responsibility is to test software codes and identify bugs in codes. Software testers make sure that each software program achieves the purpose of the software developer and is fit for consumer use.

These software companies are often faced with challenges that come with the fast-paced nature of the high-tech industry, for example, the need to create a product for the right market, at the right time. In a highly competitive industry, software engineers and developers are prone to failure on the job. One example of such a work failure would be an unexpected software malfunction caused by having too many users logged onto the app at once. Software engineers and developers that I spoke with explained that the behavior of an app can change when it receives an overwhelming number of uses, and this behavior is unpredictable. If such a situation goes unnoticed by the software developer, the app will cease to function and cause other technical problems and possible monetary consequences for the firm.

3.3 Sampling

Lincoln and Guba's (1985) "purposeful sampling" was initially used to choose informants who would be the most able to answer the main research questions. I then depended on the snowball technique, asking informants for their recommendations as to who could best expound on the experience of sharing failure. This was to ensure "information rich" cases, or

people who could speak to the phenomena appropriately (Miles & Huberman, 1994). These were individuals who were familiar with the high occurrence of failure in a high-tech context and had shared such failures with others.

Snowball sampling was used in this study as it is the most suitable sampling strategy to help the researcher gain access to the research population. Snowball sampling is a referral process and has also been called chain sampling. The topic of failure has a negative connotation, and people may not respond well to research advertisements that discuss failure. Therefore, snowball sampling was particularly useful because the population being studied was unlikely to respond to advertisements because of the stigmatizing nature of the topic (Heckathorn, 2002). By depending on referrals from individuals, I had a higher chance of reaching the target research population and have them agree to participate in the study. The disadvantage of using the snowball technique is that the research population can be homogenous in terms of demographics because it is limited to people known to those who are doing the referring. However, this was not the case for this study as the final sample had a balanced mix of informants (see section 3.3.1).

Beginning in May 2016, I identified two individuals who were relevant to the study. I did this with the help of a Chinese colleague in Canada who has two close friends in R&D from two separate high-tech firms in Shanghai, China.

I arranged for an initial Skype meeting with both of these individuals in Shanghai for pilot interviews and asked them to introduce me to other useful informants, defined as software engineers in R&D departments of high-tech firms in Shanghai who would speak to the topic of sharing failure. Interviewees were recruited from a total of 11 high-tech firms in Shanghai.

I gained access to all 11 high-tech firms using the snowball technique as explained above, whereby informants introduced me to other informants. These informants introduced me to their colleagues, ex-colleagues, and/or friends whom they had met in university, all of whom were currently working in software engineering at the time of data collection. Data collection took place over a duration of almost two weeks, at the end of June 2016 and beginning of July 2016, in Shanghai.

I interviewed 32 informants for this study. By the end of the 32nd interview, I decided that further data collection and analysis would yield no further explication of a given category or theme and that I had reached theoretical saturation point (Glaser & Strauss, 1967; Guest, Bunce, & Johnson, 2006). After each interview, I undertook preliminary data analysis and noted every theme in my research diary.

3.3.1 Research informants

The majority of the informants were male ($n = 24$), and eight were female. This gender division of the sample is representative of the male-dominated high-tech industry (Maurer-Fazio & Lei, 2015). Most of the informants were married and had children below 10 years old. Only one informant had a spouse who was also in the same high-tech industry. How this affects the target of their failure sharing is discussed in the findings.

The informants ranged from having had a few months to 17 years of work experience as a software engineer/developer/tester. This added variability in how informants experienced failures at work and how they have learned from these experiences. It is important to note that all of these informants (including the informant with 17 years of experience) had worked only in the software industry.

The informants ranged from 24 to 45 years old (see Appendix A for a detailed breakdown of the sample). With respect to the length of time living in Shanghai, most of the informants had moved from another province in China to work in Shanghai. Their job tenure equaled their length of time living in Shanghai.

Seven of the 11 companies were multinationals, three were mid-sized firms, and one was a start-up company. It was important to gather data from more than one company as this gave more variety to the data. Different companies have different team structures or policies that influence how their employees experience failure sharing. All of these companies have a R&D department in Shanghai, and all of these firms are private firms.

3.4 Data collection

I recruited and prearranged all interviews before leaving Canada for Shanghai. With the help of a Chinese colleague in Canada, as previously mentioned, interview recruitment and arrangements were made via the popular Chinese mobile communication app WeChat. From the two key informants, I collected contact information of other possible informants. From there, each potential informant was sent an email interview participation invitation that included an introduction to the study, the research objectives, management implications of the study, format of interview, estimated date, location and duration of the interview, description of the compensation for taking part in the interview, and a statement of confidentiality regarding all interview data. The information letter also included my contact information in the event that interviewees wanted to know more about the study and their involvement. This interview participation information letter can be found in Appendix B. Once an informant agreed to participate in the study, I contacted them individually via email and/or WeChat to arrange for an interview time, date, and location.

When an informant arrived at the interview location, I greeted them and introduced myself. I then gave the informant an informed consent form, both in English and Mandarin (English consent form can be found in Appendix C, and its Mandarin equivalent can be found in Appendix D), and allowed them time to read, understand, clarify information, and sign the form. I then asked their permission to start the voice recorder. The average length of the interviews was 45 minutes.

All interviews were conducted in Mandarin, as it is the working language in Shanghai. Once each interview was completed, each informant received RMB120 sent directly to their WeChat mobile app as a token of appreciation. Once the informant left the interview site, I wrote up field notes that included my first impressions of the interview conversation, key points that were talked about, any facial expressions and clues of the informant, the duration of the interview, and any other notes about the context of the interview. These notes served an important role as they helped me remember each interview more clearly; I referred back to these field notes when I transcribed the interviews.

3.4.1 Semi-structured interviews

It should be noted that methodological choice and research questions are influenced by the researcher's worldview or ontological perspective (Creswell, Hanson, Clark, & Morales, 2007). Thus, in answering the research questions of this study, I was primarily interested in understanding the experience of sharing failure. I used semi-structured interviews as they connect with the ontological framework of this study and allowed me to answer the research questions more fully.

The interview remains the most common method of data gathering in qualitative research (Cassell & Symon, 2004). Kvale (1983) defined the purpose of qualitative research

interview as “to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena” (p. 174). The goal of any qualitative research interview is, therefore, to see the research topic from the perspective of the informant, and in this study, to understand how and why they have come to have a particular experience of sharing failure.

A key feature of the qualitative research interview is the nature of the relationship between the researcher and the informant. Qualitative researchers do not believe in a “relationship-free” interview, which enables them to see their relationship with an interviewee as part of the research process and not a distraction from it. The interviewee is seen as an informant who is actively shaping the course of the interview rather than passively responding to the interviewer’s pre-set questions.

Given that the objective of this study was to gain an emic understanding of informants’ failure sharing experiences, the in-depth semi-structured interview was the most appropriate method of data collection (Denzin & Lincoln, 2011; Marshall & Rossman, 2014). One of the central features of the in-depth interview is that it allows the researcher to “understand the experiences of other people and the meaning they make of that experience” (Seidman, 1998, p. 3). In my research, this refers to the informants’ experiences of sharing their failures with others. Interview questions were intended to guide the conversation between the researcher and the informant. The themes of the interview were predetermined, drawn from the study’s research questions as well as from existing literature primarily related to knowledge sharing and learning from failure. But they were also emergent, as I allowed other themes to emerge from the interview. The key benefit of in-depth, semi-structure interviews is that they have sufficient

flexibility so that the informant could raise themes that are important to them and reflect their experiences.

3.4.2 Interview guide

This section will detail the data-collection instrument used in this research, namely the interview guide. The semi-structured interview is not based on a formal schedule of questions to be asked word-for-word in a set order. Instead, it generally uses an interview guide, listing topics, questions, and prompts that the interviewer attempts to cover in the course of the interview. My role as the interviewer was to be an active listener and to be open to concepts that I was previously unaware of.

The research literature, my own personal knowledge and experiences of failure sharing, and informal preliminary pilot interviews with people who have shared work failure informed this research guide. The actual interview guide can be found in Appendix E, and its Mandarin equivalent in Appendix F. The research literature that contributed to the interview guide included learning from failure literature (Carmeli & Gittell, 2009), knowledge sharing literature (Ipe, 2003), motivation to learn literature (LePine, LePine, & Jackson, 2004), impression management literature (Bolino, 1999), psychological safety literature (Siemsen et al., 2008), trust literature (Mayer & Gavin, 2005), and self-disclosure theory (Omarzu, 2000).

The interview guide guides the conversation between two people interested in a theme of mutual interest. The development of the interview guide does not end at the start of the first interview. Rather, it is modified through use as the researcher adds probes that were originally not included. One example would be the question of “how has your sharing failure behavior changed over all these years of working?” This question was not in the original interview guide. However, after interviewing a number of informants, I started to hear responses that suggested

that sharing failure behavior changes as people gain more sharing failure and work experience. Once the preliminary interview guide had been developed, it was tested on several pilot informants.

3.4.3 Pilot interviews

A number of pilot interviews ($n = 9$) were conducted prior to the research study to help address any weaknesses in my interview style and remedy them for subsequent interviews (Field & Morse, 1985). These pilot interviews highlighted problems with the research and interview questions and identified other significant issues worthy of exploration (Sampson, 2004). Four of the pilot informants were female, while five were male. Seven of the pilot informants worked as software engineers in high-tech firms (all but one of them in China), while the remaining pilot informants held jobs in non-high-tech firms (i.e., university administrative role and hospital laboratory researcher). These pilot informants were not the same informants as in the actual study. One pilot interview was conducted in English, while the majority ($n = 8$) were conducted in Mandarin. By conducting these pilot interviews in Mandarin, I was able to address weaknesses in my Mandarin language skills and also to identify any technical terms in Mandarin that I did not know.

The pilot informants gave me important feedback that allowed me to make improvements in the interviews of the larger study. Most of the pilot informants learned about their own sharing styles and habits, which they said they had never considered prior to the interview. One pilot informant said the interview topic was “boring,” and thanks to his feedback, I changed the interview opening questions with the intention of gaining more rapport with informants before delving into their work failures.

In the pilot interviews, I asked informants about their work successes as a way to help them feel at ease. However, I found that asking about successes upfront in the interview was not a good way to build rapport. This is because informants viewed talking about their successes as boasting and did not feel comfortable doing that with me when they had just met me. I therefore rearranged the interview guide to include the topic of “work successes” to the end of the interview to conclude the interview on a positive note; informants also responded more openly.

3.4.4 Translating the interviews

All of the 32 interviews were audio taped and transcribed from Mandarin into English, and then analyzed using thematic analysis (King, 2004) to identify dominant and subsidiary themes and the potential connectivity among interviewees’ experiences of failure sharing. I am fluent in spoken and written English and also fluent in spoken Mandarin.

Certain Mandarin phrases do not have exact translations in English. For example, here is a quotation from informant 15, explaining why he does not share his work failure experiences with his friends who are not knowledgeable in software: “sometimes they won’t be able to understand me. Because 隔行如隔山” (meaning a different industry is like being separated by mountains). In such instances, I described the meaning of the phrase in English using my own words. This is called “free” translation (as opposed to literal translation) and this is the procedure recommended by linguists (Birbili, 2000). There are implications for choosing to use free translation. On the one hand, the quotations “read” well, and it helps the reader understand the text. On the other hand, the quotations are actually interpretations of the words of the informants, and misinterpretations are probable. Linguists argue that by changing the structure and by adding missing fragments, the quotation is more easily understood by those who are not familiar with the context. Therefore, a “free” translation seemed appropriate.

To increase the credibility of the translation of the interviews, I consulted knowledgeable Mandarin-language friends and colleagues as well as used Google Translate to help me get the best English translation for the transcriptions. I also back translated from English to Mandarin using Google Translate. Back translation involves looking for equivalents through the translation of items from the source language to the target language, an independent translation of these back into the source language, and the comparison of the two versions in the source language until ambiguities in meaning are removed (Birbili, 2000). As mentioned, I also consulted with people who were bilingual in English and Mandarin about the use and meaning of words and phrases I identified as problematic. Scholars have recommended the use of consultation when it comes to translating words that exist in one language but not in another (Filep, 2009).

3.5 Data analysis

This study used thematic analysis (King, 2004; Marshall & Rossman, 2011) as it is well suited to explore personal experiences of sharing failure by identifying themes in the data. Thematic analysis is useful for examining the perspectives of different research informants, highlighting similarities and differences, and generating unanticipated insights (King 2004). Thematic analysis makes it possible to develop conceptual themes, their clustering into broader groupings, and the eventual identification across cases of parent themes with their subsidiary constituent (or child) themes (King, 2004). As such, data analysis involved organizing data in ways that allowed me to identify patterns, themes, and relationships. These enabled me to interpret data and move towards generating theories.

In this study, all interviews were transcribed in full and then analyzed using computer assisted qualitative data analysis software (NVivo 11.3). This software allows for in-depth

exploration of data. It especially enabled me to analyze the data using template analysis (King, 2004), which is a process used to identify key themes. The advantages of using NVivo include the ability to digitally store and retrieve all the data in one location, and this included raw interview data as well as the coded data. NVivo also provided a reliable way of keeping track of codes and presenting the data. Using computer assisted software in the data analysis process has been thought by some to add rigor to qualitative research (Richards & Richards, 1991). For example, one useful function of NVivo is the search facility that enables the researcher to interrogate the data using specific key terms or word(s), which rules out human error of manually counting how many informants mentioned a specific term or word. NVivo also helped me gain an overall impression of the data as it has the function of creating “tree maps” to visualize codes. Another useful function of NVivo is its ability to include memos in the coded data. This allowed me to connect my thoughts while linking together several codes and memos within the data. All in all, NVivo was a good data organizing tool for this study (also described in Smith & Hesse-Biber, 1996). When it came to analyzing the data, I still preferred using manual methods, such as going through coded text, memos, and drawing data structures. After all, NVivo cannot make judgments on data.

In analyzing the transcribed data, I had an idea of some of the themes that might emerge based on my review of the literature, and I was also sensitive to new themes that would distinguish my findings from those of other scholars. As noted previously, abduction was used in this study. This means that the initial coding frame was informed by the literature review but then informed by informants’ comments. Therefore the final framework was wholly determined by what the informants said.

In this first stage of coding early on in the data analysis, I used the words of the informants and created as many categories as the data allowed for. This is called “first-order coding” (Van Maanen, 1979). A code is assigned to a section of text (interview transcript). For example, one of the codes identified was “safety,” so everything relating to the safety of sharing failure was coded that way. The length of coded text ranged from one sentence to multiple paragraphs. Multiple codes were overlaid onto any given passage of text when multiple themes were found. This is called “parallel coding” (King, 2004). For example, text relating to “Safety” was also related to the theme “Not sharing failure.” Thus, by using parallel coding it was possible to see connections in the data. The process of coding was as follows: each transcript was read word-for-word and coded. I then entered all codes, facilitated coding links (i.e., relationships between a parent code and a child node), and performed text searches.

As the data analysis progressed, I started to seek for similarities and differences among the many nodes, which facilitated assembling them into higher-order themes. For example, the first order concepts “Saving face” and “Maintaining reputation” were similar in the sense that both were about controlling information in social interactions. Therefore, these concepts (or nodes) were grouped together. This second stage of coding is an established method of “meaning condensation” (Lee & Lee, 1999, p. 89) wherein I extracted the most relevant themes from the interview transcripts by selecting those that allowed me to answer my three research questions.

I compared emerging ideas from the data with existing literature (e.g., impression management, trust) and vice versa in such a way that each was used to inform the interpretation of the other. At this stage, I needed to consider the multiple levels of the data, both at the informant level and also at the more abstract second-order theoretical level of themes (Gioia,

Corley, & Hamilton, 2013). An example of a coding table I used can be seen in Table 1 below.

In this coding table, the first column contains the interview quotations, the second column, the first-order concept, the third column, the second-order theme, and the final column, the aggregate dimension.

Data structure for Research Question 1: Deciding to Share Failure (Positive)			
Interview Quote	First-Order Concept	Second-Order Theme	Aggregate Dimension
<p>“these failures are very weird, sometimes these failures occur for a reason, and even if you don’t know this reason, maybe other people know of a solution. So this is why I need to communicate with others [in the team].” (Informant 23)</p> <p>“some problems [failures] are difficult to pin point on your own, but from a by-stander’s perspective the problem [failure] becomes obvious. So it’s still best to tell others and use their perspectives to learn faster.” (Informant 15)</p>	Finding a solution	Seeking technical help	Help-seeking
<p>“she [wife] doesn’t give me good ideas [about how to solve the failure], but I just talk to her, to talk, just to talk. Does this help? Yes . . . for feelings, yes.” (Informant 2)</p> <p>“mostly with my wife and with my mom, I would tell these [failures] to them, actually they cannot solve the failure with you [me], but I would be able to de-stress, this is very important because if I cannot de-stress and my stress piles up, it can become very serious.” (Informant 19)</p> <p>“I think it is good to tell him [husband], to let him have some burdens of mine, I want to find someone to confide in, and someone to help with the issue [failure]. Once it is solved, then we’ll both be happy.” (Informant 5)</p>	To de-stress	Seeking emotional support	

<p>“I would go to my leader, or the project manager to tell of my difficulties [failures]. To tell them of the lack of resources, the lack of time. . . . Well, the leader is an individual, mine is older with more experience and he would help me think of solutions. He would get resources for me. For example, if we lack a program or facility or if the request is unclear, he would search for the solution. He would also meet with the market team, those that are internal to our company studying the market.” (Informant 17)</p>	<p>Get resources</p>	<p>Seeking to correct latent errors</p>	
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Table 1: An example of a coding table from this study

Next, I arranged the codes in a hierarchy. To build this hierarchy of codes, I considered how each emerging theme contributed to an understanding of the process of failure sharing. I focused my attention on existing concepts that were relevant to failure sharing (such as trust, psychological safety) and also new concepts that, although they have less theoretical presence in the literature, have the potential to answer the research questions (impression management, emotion regulation, altruism). These techniques were not linear but were recursive, and I continued using them until I had a clear grasp of the emerging theoretical relationships.

3.6 Ethical considerations

This section describes how I upheld ethical requirements for the study by ensuring anonymity of the informants and keeping research documents secure. According to York University’s Faculty of Graduate Studies, research for most doctoral dissertation has to be approved by the Office of Research Ethics (ORE). This research has to also receive approval from the Human Informants Review Sub-Committee and York University’s Ethics Review Board and conform to the standards of the Canadian Tri-Council Research Ethics guidelines.

To ensure my research met the ethical standards of York University, each informant was given an interview informant consent form in English and Mandarin. These consent forms can

be found in Appendices C and D, respectively. In this consent form, informants were assured that their participation in the study was completely voluntary and that all data collected from them would be seen only by me. This was important for all informants to know and understand as the interview asked them about sensitive information, such as their failures at work. Gatrell (2009) wrote about safeguarding informants in qualitative interviews, especially if the interview deals with sensitive topics. Gatrell (2009) stated that it is the responsibility of the researcher to minimize the risks to informants of participating in qualitative interviews. Similar to Gatrell's (2009) research, I invited informants to provide general feedback at the end of each interview, and informants acknowledged that although it was hard to recollect certain experiences of failure, they welcomed the chance to talk about it with someone who was genuinely interested in what they had to say. One informant said it was beneficial for her to relive the failure and to have a chance to reappraise the experience.

3.7 Potential research limitations

As with most research studies, this study's methodology had some limitations that must be acknowledged. First, all data collected for this study was self-reported. However, self-reported data seemed to be the most credible form of data. Since this study examines the perceptions and experiences of informants, the informants were the best placed to report their perceptions of their failure sharing attitudes and activities at their workplaces.

Next, the possibility of social desirability bias has to be acknowledged, and because this study is embedded in an interpretivist paradigm, it is reasonable to assume that informants wanted to present a positive image of themselves and their failure experiences to the interviewer. However, I tried to limit this in the interviews by gaining rapport with the informants. To do this, I began each interview by showing my interest in their job and allowing

them to freely speak about their job, before I delved into asking about their work failures. This helped informants open up, and towards the end of the interviews, most informants said that they felt relaxed and relieved after talking with me about their failure sharing behaviors.

Another potential challenge of the study stems from the nature of the phenomena itself, that is, failure sharing and its ongoing meaning. The phenomenon of failure sharing is not static, as meanings change as our experience of it evolves over time. In other words, how the informants understand failure and failure sharing is an ongoing negotiation of meaning rather than a definition that is static. This posed challenges for me because it was not a one-time session of “pure” data collection. Instead, it was a negotiation of meaning with the informant, and the results are therefore prone to be influenced by my personal biases. To overcome this, I had to identify my own biases and assumptions before conducting the interviews and be aware of them while interpreting the results.

Potential limitations of the context of the study also posed challenges. As mentioned earlier, the interviews were conducted in Shanghai. I am ethnically Chinese and speak Mandarin fluently, but I was not raised in China. This meant I needed to learn cultural values practiced in China before conducting research in China. For example, the concept of *guanxi* (this means to have connections with others to “open doors”) was relevant from the beginning of my recruitment. My Chinese colleague has an extensive network of contacts in Shanghai as he had been living there for many years and had built relationships with his workmates. From his wealth of network contacts, I was able to tap into the target group of software engineers.

Other than national culture, I also considered industry culture as a potential challenge to this research. In a high-tech industry, and especially in R&D departments, there can be a culture of self-protection. In other words, it is possible that employees do not admit their failures

(although from an outside view, high-tech firms are characterized by failure). We know from past research that high-tech firms value knowledge sharing (Collins & Smith, 2006). As well, knowledge may be seen by employees in high-tech firms as a key source of power and job security, which makes knowledge a key resource (Davenport & Prusak, 1998). This may be a deterrent to sharing failures with others as there is a risk of losing this power. In such a situation, I had to be sensitive to the nature of the topic and know that the discussion of failures might be uncomfortable, counter-intuitive, and even embarrassing to the informants. However, this is the essence of such an intriguing topic and area of research.

In this chapter, I have explained the research methodology I used in this study, highlighting the data collection strategy and data analysis method. The next three chapters will discuss the findings of this research.

4 Findings: Motivation of Failure Sharing

The findings for this dissertation will be reported in three separate chapters. In this chapter, I discuss findings that relate to RQ1: why do individuals share, or not share, failure with others? Chapter 5 corresponds to RQ2: why do individuals choose the target they do to share failure with? and Chapter 6 corresponds to RQ3: What do individuals learn from sharing failure?

To answer RQ1, this chapter reports on factors influencing the motivation to share, and not share, failure. This chapter is structured as follows: first, I present and discuss the factors influencing the motivation to share failure, then the factors influencing the motivation not to share failure. This is followed by a conclusion.

4.1 Factors influencing the motivation to share failure

This section documents informants' responses about what motivated them to share failure. Figure 3 below illustrates the motivations to share failure, which include (1) help-seeking and (2) help-giving.

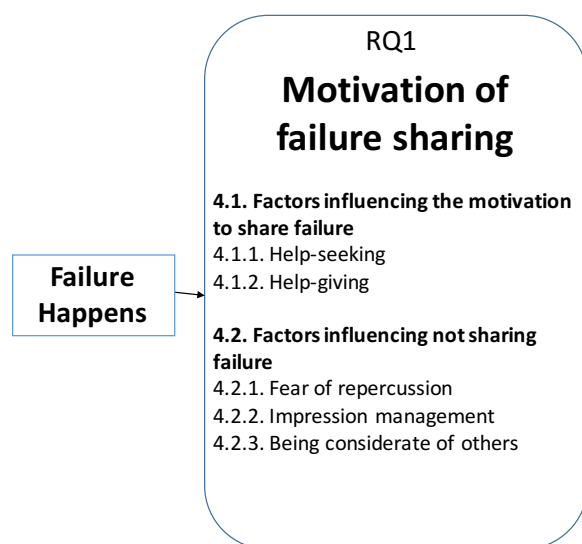


Figure 3: Factors influencing the motivations to share failure: Overview of themes

4.1.1 Help-seeking

Often in failure, something has gone wrong and the individual has trouble solving the problem. The findings in this study suggest that individuals' help-seeking behavior is of three main types: (1) seeking technical help (software programming knowledge), (2) seeking emotional help, and (3) seeking help to correct latent errors (see Figure 4 below).

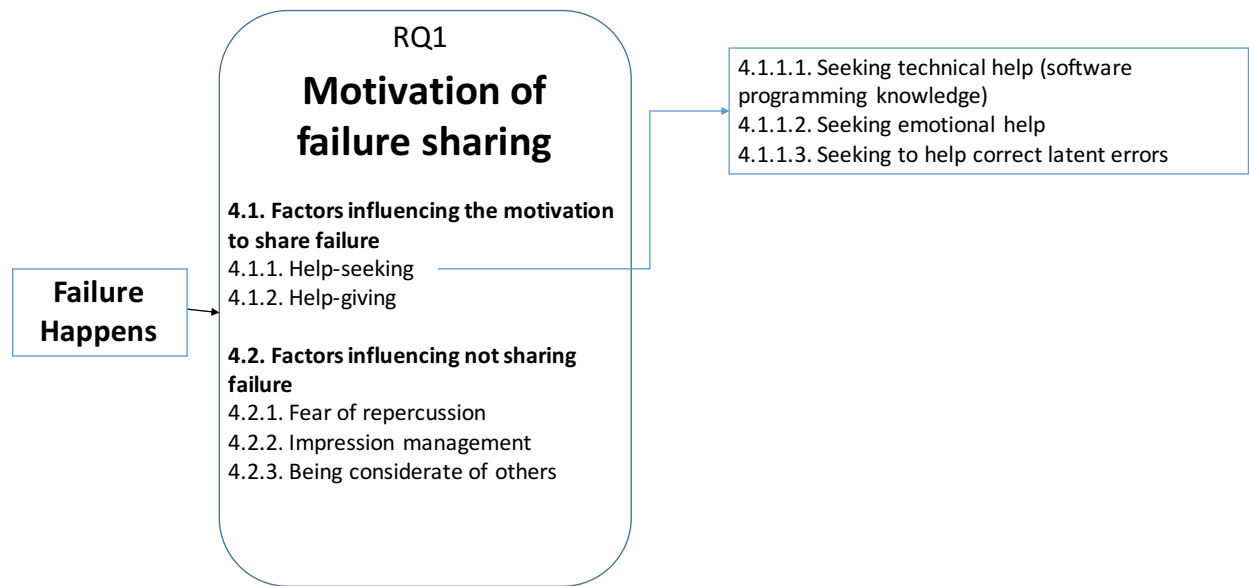


Figure 4: Factors influencing the motivation to share failure: Help-seeking

4.1.1.1 Seeking technical help (software programming knowledge)

This first type of help-seeking was one of the most dominant themes as almost all informants were motivated to share their failure in order to find help in solving their problem. Informant 23 started the interview by giving an overview of how he tended to react to work failures in general. He recounted how he hoped to find a solution to his failures by sharing them:

These failures are very weird, sometimes these failures occur for a reason, and even if you don't know this reason, maybe other people know of a solution. So this is why I need to communicate with others [in the team].

This need for technical help was also echoed by informant 15. He was speaking in more general terms and not about one specific target:

Some problems [failures] are difficult to pin point on your own, but from a by-stander's perspective the problem becomes obvious. So it's still best to tell others and use their perspectives to learn faster [of the solution].

Another example is informant 5:

[I shared my failure with] those who have been here for longer, my seniors. I told them about my problem [failure]. They had more experience than me to help me.

It should be noted that several informants chose to use euphemisms when referring to failure, for example, “problems.” (This will be explored further in Chapter 7, section 7.6.3, Using euphemisms for “failure”).

Informants 23, 15, and 5 illustrated the need to go beyond their own knowledge by sharing their failure with others, in the hope that they would learn from others. In this study, this type of help-seeking was particularly salient for those seeking technical software programming knowledge. This demonstrates that the motivation to share was connected to the target with whom they are sharing. Informants revealed that when they needed technical help, they usually shared their failure with colleagues within the company. This could be due to several reasons, which will be explored in the next chapter (see section 5.1.4, Target has had similar failure and section 5.1.5, Target has had similar work experience). Another possible reason for sharing within the company is that informants were abiding by the company's confidentiality rules and therefore chose targets who were internal to the company. (This point would be further discussed in section 4.2.1.2, Complying with company rules.)

4.1.1.2 Seeking emotional help

Other than seeking technical help to resolve their failure, informants often spoke about their need for emotional help as another factor influencing their decision to share their failures

with others. Seeking emotional help is defined in this study as the effort made in search of psychological comfort, such as consolation after failure. Informant 2 spoke about this emotional help, which he received from his wife:

Informant 2: She [wife] doesn't give me good ideas [about how to solve the failure], but I just talk to her, to talk, just to talk.

Interviewer: Does this help?

Informant 2: Yes, for the heart, for feelings yes.

This short fragment of the interview with informant 2 illustrates the desire for comfort following a failure. Informant 2 was willing to share his failure with his wife, even when he knew she would not be able to help him resolve the failure. He specifically needed emotional help from his wife. In section 4.2.3, Being considerate towards others, we will see the juxtaposition of this point, where some informants did not share their failure with family members for fear of putting a burden on them. Sharing failure for emotional help was target specific as informants revealed they would share their failure with a family member (usually a spouse and/or a parent).

This factor of sharing with family members for emotional help was also evident in informant 19's interaction with his wife and mother. He said he shared his failure

mostly with my wife and with my mom, I would tell these [failures] to them, actually they cannot resolve the failure with you, but I would be able to de-stress, this is very important because if I cannot de-stress and my stress piles up, it can become very serious.

Similarly, informant 5 shared her rationale for seeking emotional help from her husband,

I think it is good to tell him [husband], to let him have some burdens of mine, I want to find someone to confide in, and someone to help with the issue [failure]. Once it is solved, then we'll both be happy.

Emotional help came from those targets who did not necessarily understand the technical aspects of the failure but could help with reducing the stress that came with the failure. The act of talking with another individual about the failure had a positive effect on informants' emotional unease that came with the failure. Seeking emotional help was evidently important for informants in the context of sharing failures as the majority of them indicated that they would seek out a target to share with to soothe their emotional reaction to the failure, which included frustration, embarrassment, sadness, and stress.

Seeking emotional help from family was usually intentional, for example, an individual would share his failure with his wife for the purpose of gaining emotional support. However, there were also times when emotional help was an unanticipated by-product of sharing the failure. As we will see in section 6.3.1, Perceived as being "normal," an individual shared their failure online for the purpose of finding a solution for the failure, but by sharing, the individual gained comfort (i.e., emotional comfort) when the targets understood the informant's failure and sympathized with him.

Emotional help can also come from friends. Informant 11 spoke about two types of sharing: he shared his failure for emotional help and for technical help. He further explained how receiving emotional help led to better chances of resolving the failure.

Informant 11: Yes, so there are two kinds of failure sharing, so there is the emotional side, then information side. So on the emotional side, they [friends] gave me encouragement. So in this circle of friends, sharing is good for my heart, my mood, when I am down, or when I am angry about a certain thing, like this failure, I would go to talk about these with my friends and colleagues. So they have comforted me and they have also helped me think of a solution.

Interviewer: Does emotional help help you solve the work failure?

Informant 11: Well, how do I put this. Helping with emotions could be big or small, so with emotions, it might lead you to think of other possibilities or

solutions, but for specific problems, it may not solve it, but on a bigger picture, it does help by reducing stress. You might say, “oh it’s not so big after all.”

The data has shown that seeking emotional help is another factor influencing the decision to share failure with targets such as family members, friends, and colleagues.

4.1.1.3 Seeking to help correct latent errors

Latent errors are events, activities, or conditions that deviate from expectations and may cause adverse consequences of organizational significance (Ramanujam & Goodman, 2003). In other words, latent errors are organizational errors. Latent errors include the lack of resources at work, like a lack of time to complete a project. From this study, one help-seeking factor motivating the sharing of failure was to correct or reduce the latent error of not having sufficient resources. Informant 17 shared missing an important project deadline:

I went to my leader and the project manager to tell of my difficulties [failures]. To tell them of the lack of resources, the lack of time.

Informant 17, who is a software engineer director with 17 years of software industry experience, was in a position to address latent errors by bringing the issue to his manager, who then corrected the problem. It is important to note that not many informants were in the same position as informant 17; his long tenure in the company meant that he had more access to a manager. His role as a software engineer director also meant his status was higher than most of the other informants. Note that he used the term “difficulties” to refer to his failures. When I asked him why he used the word “difficulties”, he explained that did so to allude to the lack of resources that led to his failure and by doing so, he also avoided negativity that may arise from presenting his failure as a “failure”. Therefore he shared his failure with his manager for help with sourcing required resources to resolve the latent error which led to his failure. (See section

5.1.2, Target having resources for a discussion of the role of leaders and how they are instrumental in providing resources for their teammates.)

It is perhaps not identity or status that is the barrier to or facilitator of an individual sharing their failure to seek help, but rather, how the sharer perceives the outcome of the sharing and how the sharer thinks the target will react to the failure. These can exert much influence on the sharer's motivation to share failure. If the sharer perceives the outcome of sharing to be negative, then sharing will most likely not take place with that particular target. On the other hand, if the sharer perceives the outcome of sharing to be positive, such as in the case of informant 17, sharing will more likely take place.

4.1.2 Help-giving

Failure is shared not only for the purpose of seeking help. This next category of factors influencing the sharing of failure revolves around helping others. In this study, three types of help-giving were identified: altruism, reciprocity, and instrumentalism (see Figure 5 below).

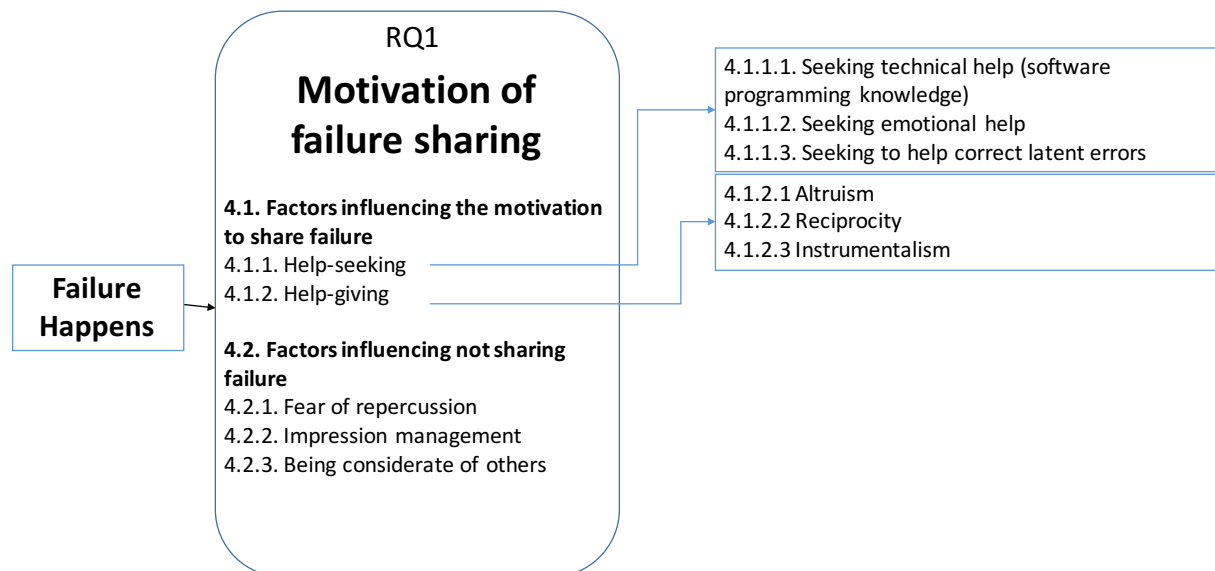


Figure 5: Factors influencing the sharing of failure: Help-giving

4.1.2.1 Altruism

In this study, data showed that sharing failure for the purpose of helping others was usually about failures that had already been resolved. With the failure resolved, some informants felt the need to share this knowledge with others to help them in their work. This is labeled “altruism” in this study, and can be seen in Informant’s 22 comments:

I think because these difficulties [failures] that we face in this [software] industry, others could run into similar situations too, so I want them to spend less time on their problems [failures].

The intention to help others was also evident when informant 13 wanted to warn others by way of his failures:

You tell others of the problems [failure], your solutions, and to warn others to not walk into the same hole.

And as informant 32 said:

I share with others my failures or wrong-doings because I think this is nothing special. Also, maybe if this can help others, I think this is more meaningful.

By sharing their failures, these informants were helping their targets. It is important to note that the majority of informants shared their failures because they wanted to help others only in the technical aspects. In other words, informants did not mention their failures to others to help with targets’ emotional needs.

4.1.2.2 Reciprocity

Reciprocity is different from altruism as mentioned previously in section 4.1.2.1. In this study, altruism is described as having “no strings attached”; the sharer does not take into consideration or is unaware of the benefits to oneself of helping the target. Reciprocity, on the other hand, is a calculated decision to help the target because the target has helped the sharer in

the past, and now the sharer has the opportunity to return the favor. Informant 3 and I had this conversation:

Interviewer: So why did you choose to help others by sharing with them your solutions to failure?

Informant 3: when I see someone close to me in need, I will help them . . . this person has helped me before.

Recognizing that the target had helped him previously, informant 3 shared his solution to his failure as a form of reciprocity. This is target-focused, meaning that the informant's decision to share failure was triggered by the realization that the target needed help and by his own ability to provide help, having failed himself. This is different from altruism as this situation is an exchange between two parties who have an on-going relationship.

4.1.2.3 Instrumentalism

Another factor influencing the decision to share failure is when an individual shares their failure because they think that they deserve some form of reciprocity from the target. This leads to their anticipation of their help being reciprocated, which is captured by the theme of instrumentalism. Here, instrumentalism is defined as expecting some form of return from one's actions. The sharer can be described as the "first mover" in setting in motion a reciprocal failure-sharing exchange. This highlights the fact that some participants were calculative in their failure sharing efforts and that their sharing was targeted at those who they thought would be willing to reciprocate. Instrumentalism as a factor influencing the sharing of failure would then mean that an individual would be driven to share failure if they foresaw a return in sharing. For example, Informant 14 said,

So maybe I help him now [by sharing with him how I resolved my failure], and in the future I might need his help too.

Similarly, informant 3 stated his reasons for sharing:

I see him as a friend and I am willing to help him, I see that he is a very good person and I want to help him . . . and in the future, I may also need his help, so I am willing to help him now.

These two quotations are sharer-focused. This is different from the previous theme of reciprocity, which was target-focused. The cycle of social exchange is built on the anticipation that good deeds will be reciprocated if you do good to others—forward thinking about a future situation where a target might be able to help the sharer in the future. This calculated reasoning for sharing one's failure is usually of failures that have been resolved. Therefore, by revealing the solution, the sharer hopes that the target will benefit from the failure experience and will therefore remember this help and help the sharer in the future.

4.2 Factors influencing not sharing failure

Now we turn our attention to the factors influencing decisions not to share failure. Three themes were identified in the data: (1) fear of repercussion, (2) impression management, and (3) being considerate towards others.

4.2.1 Fear of repercussion

One of the themes that motivated informants not to share failure with another person was the fear of repercussion. Here, fear of repercussion is defined as a concern of the possibility of negative consequences (e.g., disciplinary action from a supervisor) after failure is shared with others (Castel, Ginsburg, Zaheer, & Tamim, 2015). I identified two sub-themes relating to the fear of repercussion at the workplace: (1) Avoiding a negative reaction of the leader, and (2) complying with company rules (see Figure 6 below).

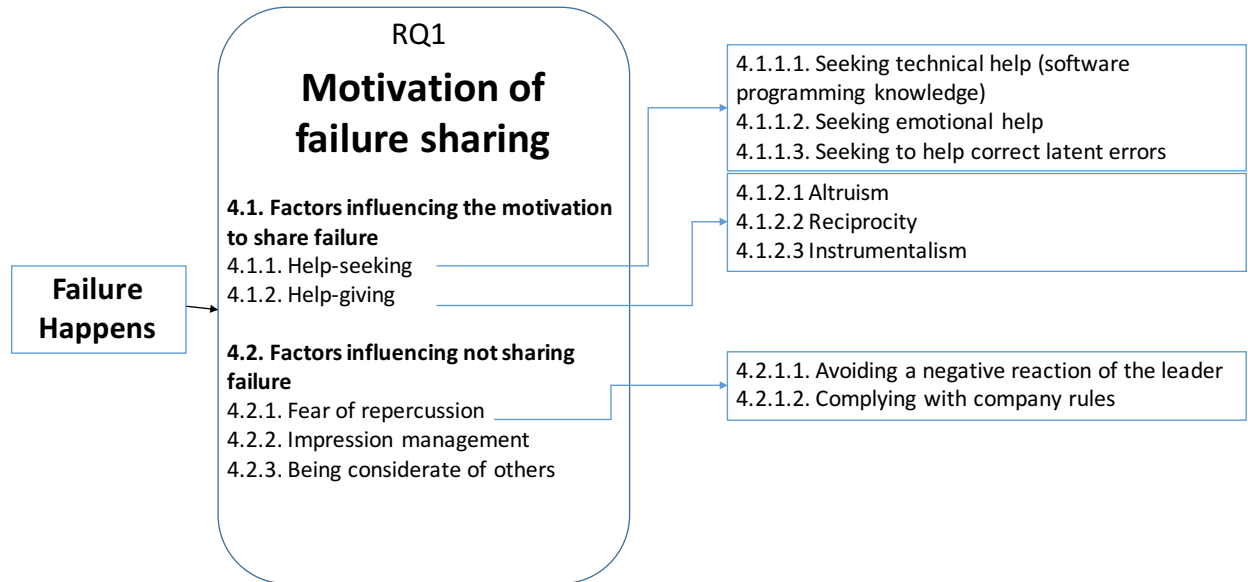


Figure 6: Factors influencing the decision not to share failure: Fear of repercussion

4.2.1.1 Avoiding a negative reaction of the leader

The first factor influencing a decision not to share failure arises from a fear that a person in a more senior role than the informant will react negatively. By choosing not to share a failure with a leader, informants avoided any negative reactions on the part of a higher authority.

Informant 7 indicated her fear of her leader:

Well our big boss, he is sometimes [pause], well I worry about how he sees my work. He is very fierce and I am afraid of him. If the problem [failure] reaches him, this would be big. If he needs to talk to me about the problem [failure], I'm in trouble.

Informant 7 was describing her failure which she did not have a solution for and did not share with her “big boss” because she was afraid she would get into trouble if her boss found out about it.

In the case of informant 7, she called her failure a “problem.” Informant 7’s motivation not to share failure was target specific, as in not sharing failure with her leader. However, as we have seen earlier in section 4.1.1.3, Seeking to help correct latent errors, some informants

intentionally shared their failure with their leaders for the purpose of solving latent errors.

Again, this demonstrates the importance of the sharer's perception of the outcome of failure sharing. If the informant expects the outcome to be negative, then there will be less chance that they will share their failure with that particular target.

4.2.1.2 Complying with company rules

Sometimes the nature of failure involves confidential information about the firm, and informants are bound by company rules under such circumstances to not reveal any details to people who are not in the company. Informant 19 said,

No [I would not share failure with friends outside of the company] because it would be sensitive to company secrets.

Similarly, informant 14 said,

some things in the company are confidential then no [I wouldn't share], but other things, not so much. . . . Sometimes the word "failure" isn't very fitting. I would say "situation." So as long as it is not a company secret, I would usually say [share] it.

Again, this barrier to sharing failure is target specific to those external to the company, whether it is friends or family.

Informant 14 used a euphemism to lessen the negative tone of "failure." He also revealed that his company has rules that restrict his sharing of certain information with others who are not in the company. Although these quotations do not say so specifically, informants implied that there would be consequences if they were to break the company rule about keeping certain information confidential. Therefore, it can be said that these informants wanted to comply with company rules and did not share their failures with others.

4.2.2 Impression management

Impression management was another reason why informants were motivated not to share their failures as they wanted to maintain a positive image of themselves to their colleagues. Impression management is a process in which individuals attempt to influence the perceptions of others about themselves, and they usually do so by regulating information in social interactions (Leary & Kowalski, 1990), for example, by revealing only information deemed as “good” to keep up a desired image.

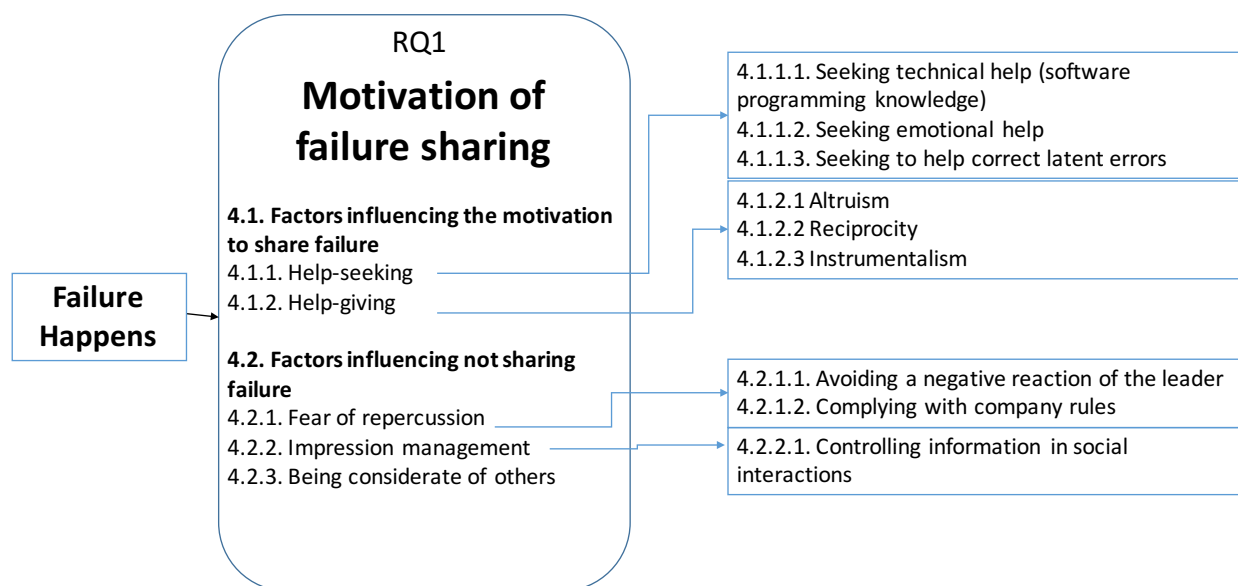


Figure 7: Factors influencing the decision not to share failure: Impression management

4.2.2.1 Controlling information in social interactions

Much of impression management is controlling information, what an individual will reveal to others and what they will hide (Leary & Kowalski, 1990). It is through controlling information in conversations with others that we influence how others view us. In this study, one of the reasons informants chose not to share their failure was to save face. This was echoed by several informants. Informant 24 described saving face:

[It is] not that I'm afraid of telling her [friend outside of company], but I'm specifically afraid of her asking me "have you not grown up yet?" I'm especially worried about this, to have her ask if I'm mature enough. So I see her as my older sister and sometimes I am like a big brother to her. I am 24 years old this year, and sometimes people still ask if I am 18 or 19, and this gives me a lot of headaches, I mind my face in these situations [failure].

Informant 24 used the example of one friend to apply to people in general, telling me why he worried that people would think he was immature if he told them about his failures. It is interesting to note that the closeness between him and his friend did not mitigate the barrier to his disclosure. The feeling of embarrassment can be so powerful that it leads to not sharing failure, even (and in this case, especially) with a close friend. Informant 24 continued:

I keep a large stone in my heart. I wouldn't present these [failures] to my friends. . . . I would want to present myself as being happy to my friends.

Here, the informant did not share his failure because he wanted to maintain a positive image in front of his friends.

Another way of saving face can be seen in informant 22's comments:

In the group [at work], not really [sharing my failures with others], because I don't want them to know about my failures. [laughs] . . . it's exactly because of [saving] face, I feel.

Interviewer: So this means you won't share your failures with colleagues at work?

Informant 22: Colleagues at work [pause] . . . yes, not sharing with them. . . . If I ask [for help from] my colleagues at work when I have a failure, it may appear like my standards are very poor. [My work] standard is rather [pause], rather poor. But if I'm at work and I ask my friend outside of work via QQ or WeChat [instant messaging platforms], I won't be exposing my own standards.

Informant 22 revealed in this quotation that he does not think highly of his own work standards (software coding ability) and does not share his work failures with his colleagues. Rather, he shares them with his friends outside of work to maintain his reputation at work and by doing so, he is saving face at work. He also maintains what he thinks is a false impression of himself held

by his colleagues. Again, these reasons for not sharing failure were target specific. In this instance, informant 22 would not share his failures with his colleagues because it would diminish his reputation at work. But he did share with his friends outside of work because these friends were external to his company and therefore sharing his failures would not affect his reputation in his company.

4.2.3 Being considerate of others

The last and final factor influencing the decision not to share failure is being considerate of others. Sharing one's failure with another individual is a two-way interaction, and most of the informants showed that they cared about the well-being of those around them, especially their family members.

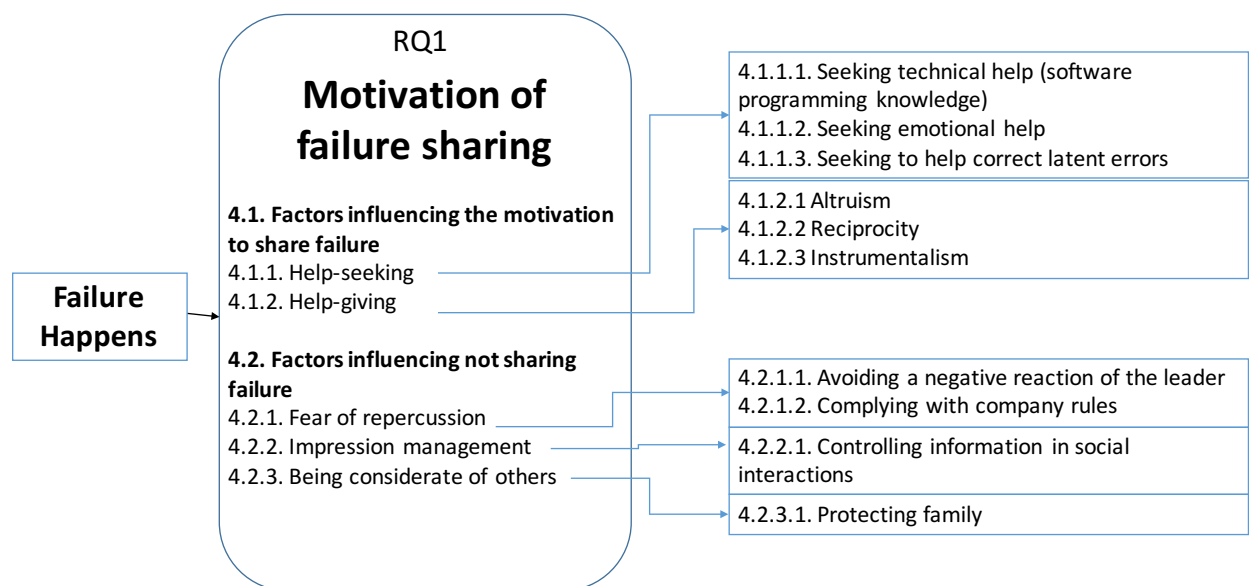


Figure 8: Factors influencing the decision not to share failure: Being considerate of others

4.2.3.1 Protecting family

In this study, family members were sometimes excluded from the sharing. Informant 11 described his reason for not sharing with his wife:

she [wife] doesn't need to know these [failure], I don't want to bring pressure to my family.

Informant 11 had not resolved his failure at the time of the interview and knew that knowing about the failure would create unwanted pressure for his wife. Similarly, informant 13 also chose not to share his failure with his family:

Because I live away from home, and when I talk about my problems [failure], it would only increase their [parents'] worry and burdens.

Again, informant 13 had not resolved his failure and saw the failure as being burdensome on his parents if he were to share it with them. Also unwilling to share failure with her family, Informant 9 explained to me that her decision to not share work-related issues with her husband is rooted in their differing views of the role of women. Her husband does not want her to work and therefore sees her work failures as non-existent. Informant 9 spoke of her husband's opinion of her being a working mother:

Because my husband thinks I need not work, so all of these [failure] doesn't matter to him. Doesn't matter if it's [work] failure or success, I don't share with my husband because he doesn't want me to work in the first place!

Informant 22 spoke about his worries about sharing his work failures with his parents who are living far from him:

Interviewer: So do you share [your failure] with your family?

Informant 22: No.

Interviewer: Why not?

Informant 22: Because [pause], I feel, parents want you to take this job and successfully complete what the company gives to you. Just like when we were younger, they want us to get full marks in our exams [laughs]. Firstly, they don't understand the work, secondly, it would make them worry, maybe I'm at Shanghai and I have lots of stress here, I am just afraid that they would worry.

Interviewer: So not to let them worry?

Informant 22: Correct, not to let them have pressure, not to let them think that I have lots of pressure here in Shanghai.

This theme of protecting one's family was prominent among the informants. They revealed that shielding their family from their failures was the right thing to do. Informants assumed that by not telling their family members about their failures, they were sparing their family from unnecessary worry and stress.

This theme of protecting one's family is seen again in informant 21's story, who chose not to share any work-related stories (not just limited to work failure) with his family:

With family, it is more of an apology. Because of my work, this software industry is with lots of work hours, longer hours, private time becomes less. For me, I hardly have time with kids, maybe on the weekends. So I can't take care of them too much. If they complain to me, I keep it inside of me and I don't tell them about work problems [failures], because after all, their unhappiness is caused by me not being able to spend time with them.

This feeling of being sorry and taking responsibility for his family's unhappiness means that informant 21 keeps his work failures away from his family.

Some informants did not share their failures with family members because they did not want to overburden family members with unnecessarily pressure. However, earlier in section 4.1.1.2. Seeking emotion help, we saw that some informants shared their failure with family members to get emotional support. This may seem contradictory, but a possible explanation for this is to not look at the identity of the targets, for example, a family member, but to focus on the benefits of sharing with the target. Some informants thought their family members would be supportive of their work and therefore shared their failures with them. However, other informants' family members reacted negatively to the failure (i.e., worried), so then informants were less likely to share failures with these family members.

Being considerate of others is therefore a selfless act that is focused on the other, rather than on the self. In comparing this barrier to sharing failure with impression management and

fear of repercussion, a clear distinction can be made: the latter two are self-focused, that is, the individual does not share failure with others in order to protect themselves. It appears that sharing failure is an interaction between the informant (as the sender) and the target (as the receiver).

4.3 Conclusion: Motivation to share failure

In this chapter, I have addressed Research Question 1: “Why do individuals share, or not share, failure with others?” The themes identified in the data were categorized as “factors influencing the decision to share failure” or “the decision not to share failure”. The factors influencing the decision to share failure have been identified as seeking help (technical help, emotional help, and latent error correction), help-giving, and the instrumentalism of sharing failure. Each of these motives to share failure were also been linked with specific targets. With technical help, informants tended to seek out teammates to share their failure with. For emotional help, the target did not necessarily need to understand the technicalities of the failure but needed to be relationally close to the sharer. For resource help, the target needed to be in a position to provide the needed resources to the sharer.

Overall, there were three factors influencing the decision not to share failure with others. I have discussed the informants’ fear of repercussion in the company, the need for impression management, and the desire to be considerate of others. All of these factors deterred informants from sharing failure with certain targets. It is evident that one’s motivation to not share failure was linked with specific targets. Informants chose not to share failure with their leaders (i.e., a more senior worker) when they foresaw the consequences of acknowledging and exposing their failure. Informants chose not to share failure with their family members to avoid putting pressure on them. Informants chose not to share failure with friends because this could result in

losing face and did not to share with colleagues because it could affect their work reputation. Overall, informants demonstrated that their choice to not share their failure was strongly connected with specific targets, for reasons such as self-protection (e.g., saving face and avoiding consequences) and target-protection (e.g., not burdening targets with negative information).

Finally, informants selected suitable targets to share their failure with. It should be noted that the exact order of which portion came first (either the motivation to share, or the target selection) cannot be pinpointed from the data. It appears that the decision to share failure and who the failure would be shared with was one thought. This was evident in the way informants responded to the interview questions. Informants would, in one breath, report why they shared their failure and who they shared it with. Informants demonstrated that their reasons to share failure were connected with their choice of target, and an important influencing factor of who the target was, was the informant's perception of what the outcome of the sharing would be and how the target would react. In the next chapter, I discuss the attributes of these targets in more detail.

5 Findings: Opportunity to Share Failure

In this chapter, I report on findings relating to the second research question: Why do individuals choose the target they do to share failure with? To answer this question, I present the attributes of the targets that influenced the sharer's choice of target. There is much data on the selection of individual targets, and in some situations, informants also shared their failures with more than one target in one sharing event (e.g., in an online forum). The following paragraphs will specifically report on why informants shared their failure with their identified target or targets. Note that these attributes of the targets are from the perspective of the informant (sharer).

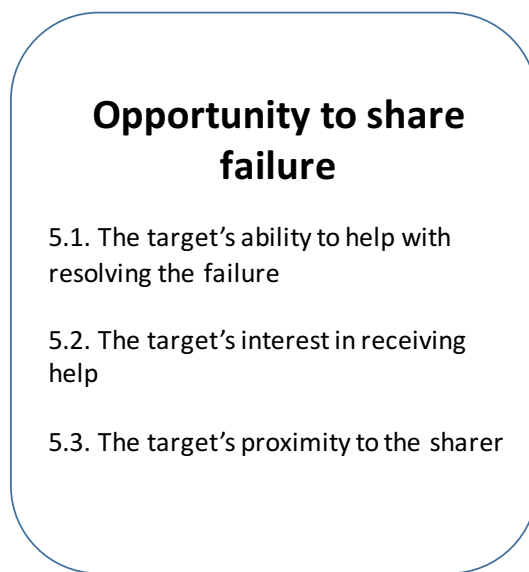


Figure 9: Opportunity to share failure: Overview of themes

As we have seen from the findings reported in chapter 4, the motivation to share failure impacted whom interviewees shared their failure with. In this section, I report on the attributes of targets that influenced the sharer's choice of target and ultimately the sharer's opportunity to share failure. These factors include (1) the target's ability to help with resolving the failure, (2) the target's interest in receiving help, and (3) the target's proximity to the sharer.

5.1 The target's ability to help with resolving the failure

When informants were asked why they chose to share their failure with a target, they described several qualities of their targets that I have categorized as “ability to help.” This is related to the motivation of help-seeking (see section 4.1.1, Help-seeking). Five sub-themes are presented in this section (see Figure 10 below).

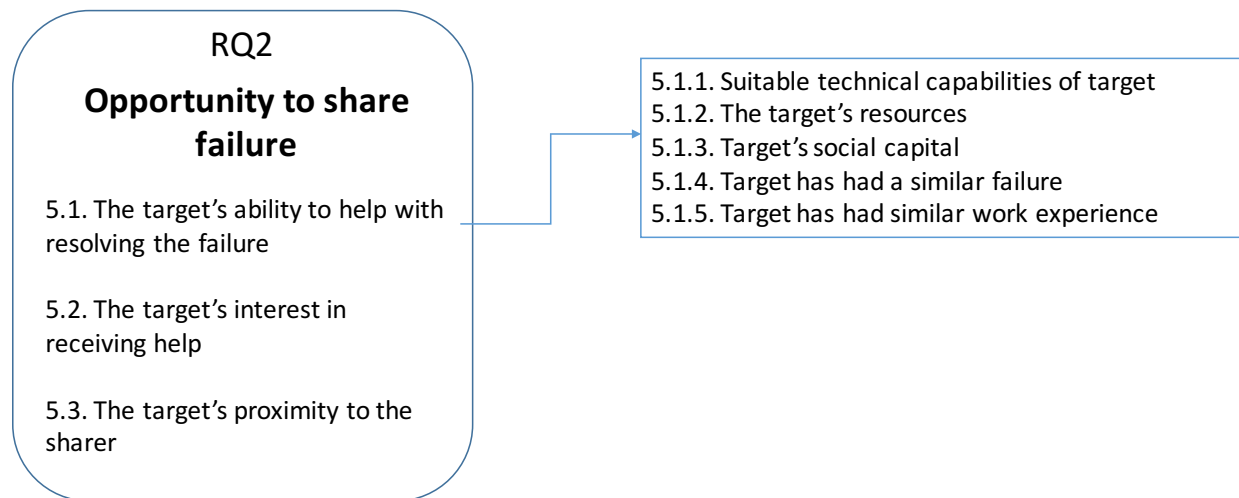


Figure 10: Opportunity to share failure: The target's ability to help with resolving the failure

5.1.1 Suitable technical capabilities of target

Ability refers to the skills, competencies, and characteristics that enable an individual to have influence on a certain matter (Mayer, Davis, & Schoorman, 1995). Informants described the ability of their targets in five different ways. Firstly, having the right technical skills and competencies was important for an informant to want to share their failure with the target if the informant's goal was to find a solution. Informants 20 and 16 referred to this evaluation of technical ability:

I know their work level, so then I can trust their work ability (informant 20).

If you trust someone but he doesn't have [the] ability [to help you], then you trust him for no reasons (informant 16).

Both informants reported the importance of positively evaluating the target's technical ability (in this case, the know-how of software writing) in order to share with that target. Needing help for their unresolved failure led to their choice of a technically skilled target. It became clear that the motivation to share (seeking technical help as the influencing factor of motivation) was inseparable from the target (someone who was technically able).

5.1.2 The target's resources

Another factor that influenced the choice of target was whether the target was believed to have the necessary resources to help the sharer, and this was target specific to leaders.

Informant 17 spoke of his leader:

My leader is older [with more experience] and he would help me think of solutions [for the failure]. He would get resources for me. For example, if we [his subordinates] lack a program or facility or if the request [from the customer] is unclear, he would search for the solution. He would also meet with the marketing team, those that are internal to our company studying the market.

Informant 17 is a software engineer director at his company, and he would often go to his leader on behalf of his subordinates when resources were needed or when problems (failures) needed to be addressed. We have previously heard from informant 17 about finding help for latent errors in (see section 4.1.1.3, Seeking to help correct latent errors). Informant 17 described his leader as being able to help by finding the resources needed to resolve issues. This kind of leadership ability described by informant 17 is that of a person who has resources and is willing to help by offering these resources, such as work facilities/software programs. Informant 17 is indicating that someone in a higher position has greater access to resources.

As seen from the data, informants' reasons to share failure were impacted by their perceptions of the target's attributes. When it came to his own work failures, informant 17

would go to his leader and ask for resources. He mentioned that he was in a better position to do so than his subordinates, and therefore he felt the need to speak up for them. By going to a leader of the company, informant 17 had a better chance of getting what he needed to resolve his failures and those of his subordinates. Informant 17's leader was perceived as a good sharing target because he had the ability to access resources needed to resolve the failures.

Informant 11 also reported about his target. To add context to this quotation, informant 11 was describing what he experienced when he shared his failure with his leader, which happens on a recurring basis.

It depends on their [the targets'] position in the company and what they do. You can judge if they can solve your current problem [failure]. Not everyone can solve your problem [failure], so [I would share] only those who are influential.

Informant 11 noted that the target's position in the company was a key consideration for him. He spoke about "influential" targets and by this he meant targets who had more authority than he did in the company, that is, his leader. The logic behind choosing a target with more authority for informant 11 was his hope that they would offer resources. This was because certain failures could not be resolved by writing the correct code but also needed resources such as money and time (latent errors). Perhaps it was the type of failure that impacted the ways in which the sharer thought the target would be helpful in addressing the failure. However, this information was not sufficiently captured in the interviews and is an area for further exploration.

5.1.3 Target's social capital

In this study, social capital refers to the network of a potential target that the sharer sees as beneficial for addressing the failure. From the perspective of the sharer, the target has a network of people who would be able to help with the failure and the ability to recommend

these people to the sharer. Note that this is different from the resources of a target discussed in the previous section. In this study, “resources” are physical, tangible items such as money or tools whereas “social capital” refers to people contacts and know-who. As an example, Informant 25 described a friend with social capital:

he [a friend] would recommend others to me to help me [with the failure]. He knows a lot more people than me.

By tapping into the network of his target, informant 25 got access to people from across the company and those outside of the company, all of whom were experts in the field of software. Without the connection from his friend, informant 25 would not have been able to get help from these contacts. This means that the ability needed in this case is the “know-who” rather than the know-how. The purpose of gaining access to this social capital is that informants learned how to avoid failure in the future and how to learn from the failure (these will be further elaborated in chapter 6, Learning from sharing failure). The target’s knowing whom to recommend to the informant was an important attribute in informant 25’s decision in choosing a target.

5.1.4 Target has had a similar failure

One of the factors that made a target more suitable for failure sharing was if the target had failed similarly. Informants considered whether a target had had the same kind of work failure before and could relate or understand the sharer’s current failure. If targets were deemed to have failed in a similar way, sharers expected the target to offer them advice on their failure. In the quotation below, Informant 1 describes her ex-colleague whom she knew to have had the same type of failure:

I told [the failure to] my ex-colleague, because he was also here in the past and had a similar issue [failure], he will understand and can give me advice. . . . Yes yes, he was also here before, and then he went elsewhere [to a different

company] . . . well, it's like this, you want him [ex-colleague] to hear you out. Maybe you already know how to solve the problem, but you want to tell it to someone. . . . So since you already have solved the problems, he can still give you more advice, suggestions, and this will help you for next time, you can still improve for the future.

Informant 1 had already found a solution to her failure and still shared this failure with her target in the hope of learning more about the failure. This eagerness to learn from failures meant that some informants selected targets whom they thought could provide them with advice for future failures. It was not that these informants had a knowledge void to fill, instead, they were in search of additional knowledge about the failure. It was because this target had failed in a similar way that he was able to give advice to informant 1.

In the case of sharing failure with more than one target (i.e., sharing one's failure with an online audience), the targets were usually individuals in the same industry or same profession, that is, software engineers. Because these targets shared a similar professional background, the sharer assumed that there was a unified understanding of work and work failure. In some cases, the sharer felt that members of the group sympathized with their failure, and the sharer received supportive comments from members of the group, in addition to gaining technical support. For example, in an online forum, informant 30 shared his failure with strangers:

QQ chat groups, there is a group of people where I've never met, or strangers. . . . I would tell strangers. Like those in QQ, I talk with them often [about my failures], but I've never met them . . . [they are] people in the same industry. Those outside won't understand your failures. For example, when I had [software] bugs for 2 days, I told them about it, if they are not in the same industry, they might think, "so what?" but those in the industry would know what your problem is. They can understand your stress, they have told me about their bugs which are similar to mine too, like "I have this bug that I haven't solved in 5 days," and such comforts would make me feel better.

For context, QQ is a social media platform that allows people to form group chats. Users use a profile identity of their choice, not necessarily their real names. These group chats are usually formed based on common interests. In this quotation, informant 30 went to an online group chat that was specifically for software engineers to seek technical help. However, he received more than he had hoped for. In addition to gaining technical help from the group, he also gained emotional support from these online QQ targets. These targets were, however, not any strangers, but specifically strangers who understood his work and were familiar with his failure.

5.1.5 Target has had similar work experience

Having failed in a similar way is different from having similar work experience. It is important to separate these two, as a target may be in the same work environment but not necessarily have had the same failure experience. The factors that contribute to having a similar work experience include having (1) a similar work environment and (2) a similar experience with software. Informant 10 describes what it means to have a similar work environment:

[I shared my failure with] those I interact with at work, or those whom I know more of, those that I am familiar with. Because they also have their views of the environment at work, when we put together our resources, we have a pretty accurate picture of the situation [failure]. Some of these are my friends. I would choose [to share failure with] them out of those I work with.

Similar experience with software is another factor influencing the target's familiarity with the work of the sharer. Software engineering is specialized work that uses its own computer language, or codes. These codes are understood internationally by software coders and, therefore, software engineers share a common understanding of them with one another. Software engineers are differentiated by the software platforms and operating systems that they work on, for example, Android and iOS. In addition to software engineers within the company, those who are external to the company and have similar work experience as the informant are

also potential targets of failure sharing. Informant 5 did not have a solution to her failure and shared it with her husband, who was a software engineer at another company:

he [husband] helped me by explaining the current situation to me, and because we have very similar experiences with software, the series of events, which matters to manage, and what kinds of situations, we have similar experiences.

According to the informants' comments, a target's ability to help is crucial when considering whether to share with that target or not. The target's familiarity with the failure was also a factor that influenced the informant's choice of target. Those who would understand the failure are friends at work, project members at work, and those who are external to the company yet have knowledge of the same types of software work.

5.2 The target's interest in receiving help

In this study, I have identified several factors influencing sharers' decisions to share their failure. Referring back to the chapter 4, sharers sometimes shared their failure to help their targets. There were two factors that affected sharers' determination that the targets were interested in receiving help: the targets were working on the same/a similar project as the sharer or they spoke the same technical (i.e., computer science) language.

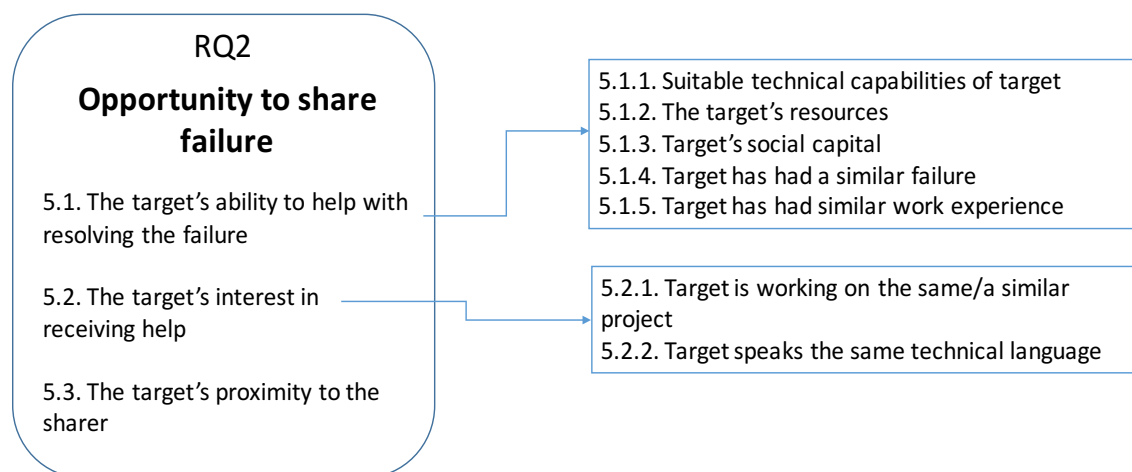


Figure 11: Opportunity to share failure: Target's interest in receiving help

5.2.1 Target is working on the same/a similar project

In some instances, sharers shared their past failure and how they addressed it with targets in the same project team or those working on a similar project. For informant 13, working on the same project was one of the determining factors that he used to gauge his target's interest in receiving help:

I told others [in the project group] of the problems, my solutions, and to warn others to not walk into the same hole.

Informant 13 was speaking here of a failure that had already been addressed. He shared it with those in the same project group, which in his case meant across departments in the company where he worked. This echoes what was said earlier about the motivation to help others (see section 4.1.2.1, Altruism).

Similarly, informant 1 described how she shared her failure with the junior employees who were working on a project similar to hers:

I shared with others [my failure], I would see who's working in a similar project and tell the novice [colleagues]. Because I know their job roles, I can't wait for them to ask me, that would be too late . . . so they can avoid the failure and also do the project fast.

In this instance, informant 1's comments link several themes: section 5.1.5: Target has had similar work experience, section 5.2: Target's proximity to the sharer, and the motivation of help-giving (see section 4.1.2.1 Altruism). It is important to note that some targets may have a number of the identified attributes of a target. Here informant 1 described how she shared her (already resolved) failure with those whom she thought needed help, that is, novice colleagues. Her desire to help her targets was evident as she was not required to spend time helping the newcomers, yet she chose to do so. She knew that her targets would understand her failure as

they were in the same work environment (“similar project”) and could, in the future, fail in the same way she had.

5.2.2 Target speaks the same technical language

Finally, informants raised a point about their targets being interested in the failure. As for sharing a failure when it has already been resolved, informant 17 stated that he would share his failure with those who spoke the same technical software language as he did.

Informant 17: These people [whom I share my failure with] are my colleagues. . . . [I share my failure with them] because we have the same language, because they are interested [in the same things as I]. As long as the other person is interested, I have shared [my failure with them].

Interviewer: How do you know that person is interested?

Informant 17: Because we are working in technology, and if we have a tech problem [failure], I believe others will also be interested.

There are similarities here between what informant 17 said about targets being interested in the failure and what informant 1 said about sharing her failure with those in a similar project. Both informants reported sharing their resolved failure with targets. However, informant 1 spoke of a proactive sharing where she reached out to targets whom she thought needed her help, while informant 17 shared with targets not because they had failed in the same way he had but because of their interest in the topic.

5.3 The target’s proximity to the sharer

In this study, “proximity” is defined as being close spatially and relationally. For the sharer to choose their target, one of the attributes of the target was whether the sharer thought the target was spatially close (physical proximity) or had a close relationship with them (relational proximity).

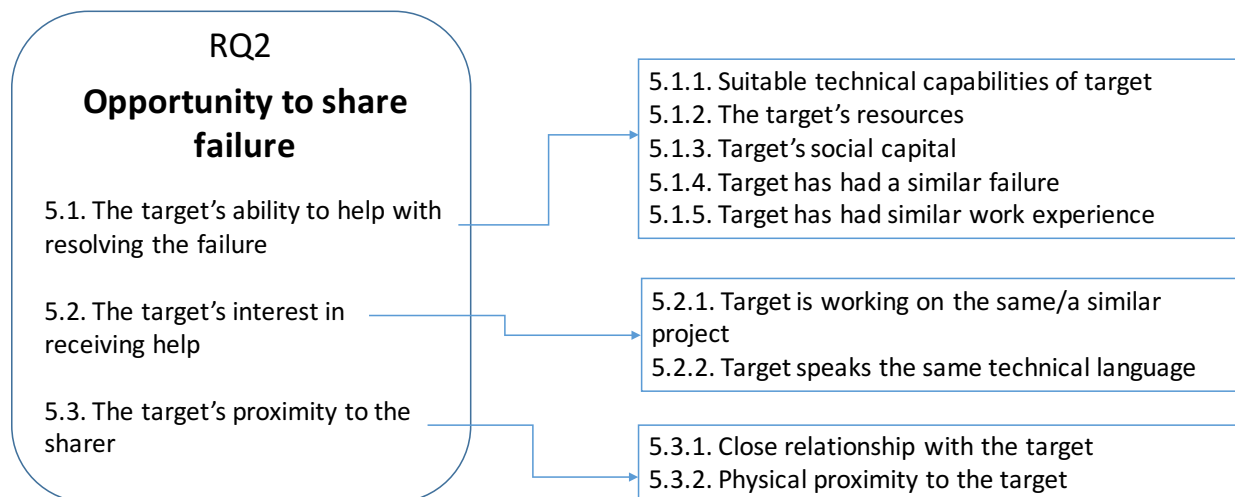


Figure 12: Opportunity to share failure: Target's proximity to the sharer

5.3.1 Close relationship with the target

Having a close relationship with a potential target makes it possible for the sharer to share their failure with the target. Family members are often the closest people to us, and this was evident in how the informants talked about family members and the support they received from them (see section 4.1.1.2, Seeking emotional help). Informant 4 spoke about her mother as her target of failure sharing:

Do you know the meaning of chicken soup? . . . So my mother was very encouraging [when I shared my failure with her] . . . my mother gave me support and she encouraged me from another perspective. She gave me advice and told me how others may see the situation.

Informant 4 likened her sharing of failure with her mother to drinking chicken soup because it soothed her. Although her mother did not understand the technical aspects of the failure, she was able to encourage her daughter by providing a different perspective of the failure.

In certain circumstances, however, informants' close relationship with the target superseded the target's understanding of the failure as the reason to share their failure. There were instances of informants sharing their failure with those who were not in the high-tech

industry but were relationally close to the sharer. This is interesting as it indicates that a potential target may not have one of the other attributes I've identified but may still be chosen as a target because they have a close relationship with the sharer.

The informants who were married often identified their spouses as their target of failure sharing. Informant 19 said:

I shared [my failure] with my wife, but it wasn't a lot. I told my friends too, but I talked mostly with my wife and with my mom, I told [them] this failure. Actually they cannot solve the failure with you, but I would be able to de-stress, this is very important because if I cannot de-stress and my stress piles up, it can become very serious.

This theme of sharing with those closest to us is similar to the one about sharing failure to receive emotional help (see section 4.1.1.2). Answers to the two research questions, motivation to sharing and the target of sharing, were often paired in the way they were presented by the informants, meaning that these replies included answers to both questions simultaneously. Informant 20 provided an example of this:

Sometimes she [wife] would have a clearer perspective from a third person's view about the failure. When you are stuck in the situation, she would have a better suggestion looking from the outside. Out of her intuition, she would give me her take of the problem [failure]. She knows me very well. She is on point. She knows me very well. Others do not know me like she does.

In this study, other than family members, friends were the next group of targets who were relationally closest to informants, and the support received from them was reported as another important reason for sharing failures with them. Informant 13 shared his failure with his friends and at the same time, he spoke about one such friend who was his ex-colleague:

If internally I don't have a solution [to the failure] I would ask my ex-colleagues. When I first started working here, there was an intern, and I made friends [with him]. So I discussed [the failure] with him and I asked if he had the same experience [of failure].

Friends, as the above quotations show, tended to be in the same industry as the informants, whereas family members were not, yet were still be targets. This may seem to contradict the motivation to not share with family so as to not bring unwanted pressure on them (see section 4.2.3.1, Protecting family). A possible explanation is that the informants considered the outcome of sharing, and if the sharing would benefit the sharer and not harm the target, then the sharing would more likely occur.

Closely related to having a close relationship with the target, multiple informants spoke about the importance of believing in the target and counting on their past positive interactions with them. Informant 22 had this reply when I asked him how he chose his targets:

Another person [I shared failure with] is a classmate who has good relations with me. . . . Telling her about the failure [pause] . . . I feel that she is a good person, she won't tell others my messy failure experiences. Those failure-things that I don't want others to know about.

In this quotation, informant 22 reveals the kindness his target showed to him, noting that the target could keep his confidence and had his best interests at heart. Informant 22 then went on to talk about another target of his, his teacher and the close relationship he had with his teacher. This teacher brought him into the software coding field and trained him to become the software engineer that he was. This teacher has been a repeated source of help for informant 22.

Interviewer: So after finding him [sharing failure with his teacher], how did he help you?

Informant 22: He [pause], he generally doesn't tell me directly how to deal with the problem. But I like that he tells me what to think, or how to think when I meet similar failures in the future. How to find the cause, he is like that. . . . So in China we have a saying from the past called "give them a fish, why not teach them to fish." . . . So the first "fish" refers to a fish, and the second "fish" is an action word, to go fishing. . . . So it means if you teach them how to fish, they will have lots of fish in the future [to be successful]. . . . [Sharing failure] with him, he is like an older big brother to us [he referred to his classmates here]. He [the teacher] is thirty years old and we spent four months at the training class. Those four months were like the period before the big Chinese exams. I believe you can

understand this. It was a tense time, very substantial, and in these four months we developed very deep relations. So it feels like I can tell him all things. Even things like my girl crushes in class, I would tell him these. So I wouldn't worry about anything.

Knowing his teacher's style of teaching and the fact that he helped him through software failures, informant 22 knew what to expect when he shared his failure with his teacher. He described his teacher's pedagogical method as having long-term benefits for him, plus his teacher was like a friend as they "developed very deep relations." Informant 22 then added: "This is when you should find someone who won't make fun of you, someone who would help you, someone you can trust." Informant 22's target (his teacher) combined ability and benevolence in that the teacher had technical ability and also informant 22's best interests at heart, made possible because of their close relationship.

5.3.2 Physical proximity to the target

Being proximal to another individual means you have access to that person. This was another factor that influenced informants' choice of target. If a target was spatially close to the sharer, there was a higher chance that sharing would take place. Here we see an example from Informant 8:

Because the friend behind me is more experienced [at work], so he was able to help me. Usually I just need to turn my chair around and ask him. He is quick to help me. He has been involved in all kinds of projects, he may not give me exact details but he has given me directions as to where I should go to solve [the problem] or find more help.

In this instance, informant 8 described the convenience of his target, and in this instance, office layout and work space were contributing factors to target selection. Informant 25 provided another example of how proximity played into failure sharing:

Informant 25: There are 2 rows of tables, back to back and also face to face. So we are all sitting on one big table.

Interviewee: So with this arrangement, does it make sharing failure easier?

Informant 25: I think this arrangement is very good. I can ask and talk to those in front of me, behind of me, left to me, right to me. . . . Yes, when I had the issue [failure], I asked them, I went one by one in all directions to ask!

Interviewer: So who did you go to first then?

Informant 25: I went to the person on my left, the person in front of me isn't in IT, so I went the person on my left. There's currently no one behind me right now.

Both informant 8 and informant 25 described a combination of factors that led them to their target—the target was spatially near them and the target had knowledge/technical abilities (see section 5.1.1, Suitable technical capabilities of target).

5.4 Conclusion: Opportunity to share failure

The second research question asks why individuals choose the target they do to share their failure with. Informants answered that question by illustrating the attributes of these targets, and if these attributes were met, the sharer then has the opportunity for sharing failure. To summarize, the sharer's perception of the target was crucial to making the decision as to whom to share with. The first factor was whether the target had the ability to help. This entailed the target having suitable technical capabilities, access to resources such as funds, having social capital, having failed in a similar way, and having similar work experience as the sharer. Secondly, if the informant wanted to help their target, they chose targets that would be interested in the failure or were working on the same project.

The final factor that influenced the selection of a target was the spatial and relational proximity of the target to the informant. In this section, I noted that when the targets were online, the concept of proximity became contradictory because sharing one's failure online was perceived to be safe (even though the relational gap increased) as sharing failure entailed less risk of repercussion.

Targets that were identified by informants included family members, managers, colleagues, friends, and chat partners in online forums and blogs. The data shows that the motivation to share is closely related to the choice of target. Again, the idea that those who knew the situation best or were most familiar with the work content, were better targets for sharing failure.

In the next chapter I report on what informants said about their learnings and gains after they had shared their failures.

6 Findings: Learning from Sharing Failure

This final findings chapter reports on data that is relevant to the third research question: What did individuals learn from sharing failure? These findings pertain to lessons informants learned after they had shared their failures and experiences of failure with their targets. I have categorized these findings into three parts: failure-related learning, sharing failure-related learning, and psychological benefits of sharing failure. A summary of these themes can be seen in Figure 13.

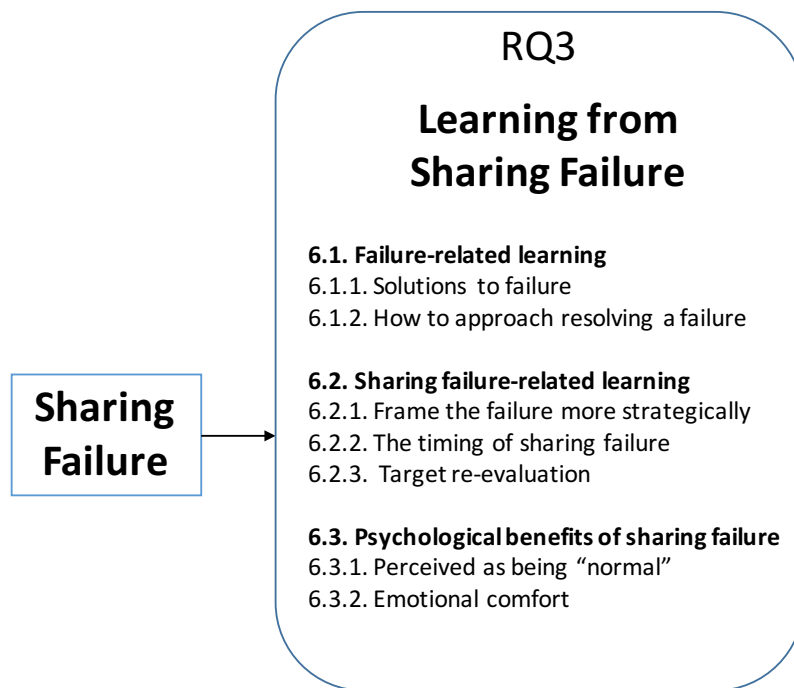


Figure 13: Learning from sharing failure: Overview of themes

6.1 Failure-related learning

Failure-related learning refers to lessons that informants learned that were related to the failure itself, mostly in a technical sense. The sub-themes in this type of failure-related learning are: (1) solutions to the failure and (2) how to approach resolving the failure.

6.1.1 Solutions to failure

When sharing failure as a way to get help, informants reported that they received technical knowledge because they shared their failure, usually with targets in the same industry. This finding may not come as a surprise, but it is important to report that the informants usually received the technical help that they were looking when they shared their failure.

One type of failure-related learning that informants identified was finding a direct solution for the failure. Informant 14 spoke about the help he received from his friend at work:

This friend is in the same industry. He wrote the plan [correct software code to resolve the failure] for me! . . . He gave me suggestions, he gave me 1, 2, 3 [options of solutions] and I tried them out. And this problem [failure] was indeed resolved.

Here informant 14 described what he learned from sharing the failure with his target. He was given the solution to the failure, plus several options to try. Not only did the target provide a solution, he made it possible for informant 14 to learn by providing more than one option. We continue to see that targets tend to provide the sharer with solutions to their failure plus other options or avenues of information that are pertinent to resolving the failure.

In some instances, informants shared their failure as a way to get more help to address their failures. Sometimes, these failures had already been resolved. In chapter 4 (RQ1, why do individuals share, or not share, failure with others?), I stated that individuals who shared unresolved failures were usually motivated by their need to receive technical help from targets, whereas those who shared resolved failures were usually motivated by a desire to help the target. In the quotation below from Informant 1, we see that she had already resolved her failure, yet was looking for additional help to prevent future failures. She intentionally approached her target, a friend and ex-colleague, to gain information on alternative ways she could have resolved the failure in order to improve her technical abilities:

So [even though] I have already resolved the problem [failure], he [a friend and ex-colleague] gave me more advice, suggestions and this will help me for next time, I can still improve for the future.

In this section, we have seen how informants, after sharing their failures, received solutions to their failures. These lessons were future orientated, meaning that what they learned would be useful in resolving future failures. To recap, you can either start with no solutions and ask for help or you already have a solution and want more advice on it.

6.1.2 How to approach resolving a failure

When informants shared their failure with their target, they would sometimes receive helpful information on how to resolve the failure. This is different from receiving direct solutions to the failure, as the informant, upon gaining this new information, needs to act on it before a solution is found. Figure 14 below shows an overview of the three types of new information gained by informants: 1) where to look for information about the failure, 2) how to gain a different perspective of the failure, and 3) documenting failure-related knowledge. It is important to note that there are a few distinctions between this section and the next. This section relates to a current failure, which is individual-level learning, while the next section (6.2), addresses how informants prepared for subsequent failures by modifying their sharing failure behavior, which is the interpersonal level.

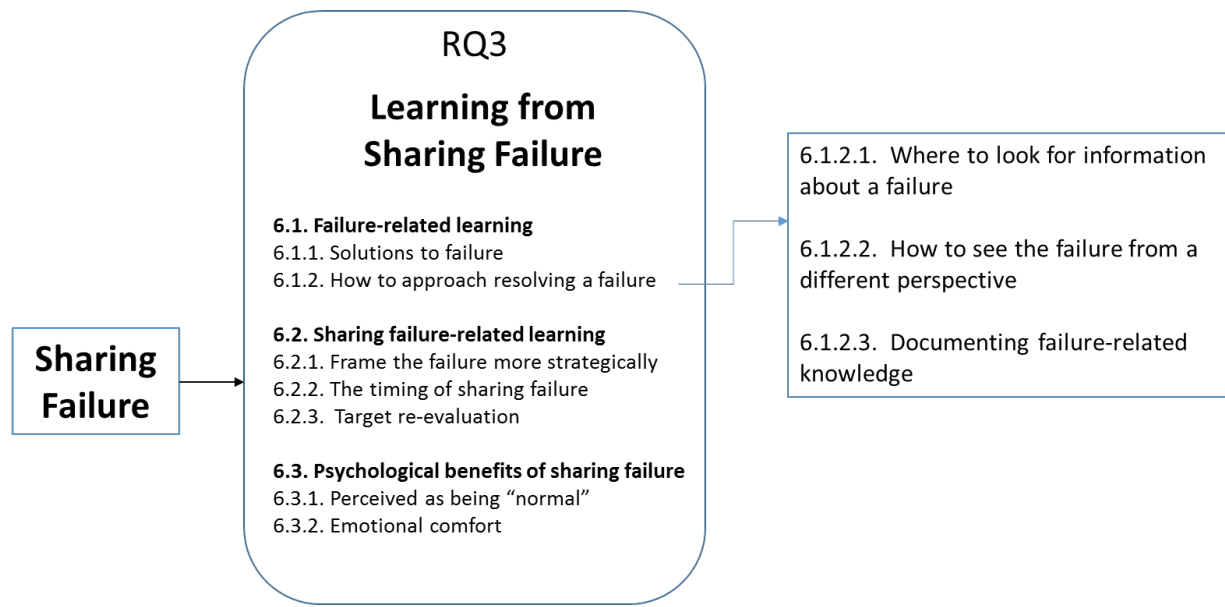


Figure 14: Failure-related learning: How to approach resolving a failure

6.1.2.1 Where to look for information about a failure

Informants learned about what went wrong by receiving information about where to look for information about the failure. For example, informant 23 described the information he gained from his targets after he shared his failure with them:

Some of them [friends] gave me some [website] links, some people have written blogs and they have links to them and they sent them to me to see if they were of help [to solve the failure]. If not [if it doesn't solve the failure], [and] they had personally had the same problem [failure], they have directly told me where the problem [failure] is and let me see where the problem [cause of the failure] is and correct it.

In this instance, informant 23 described some friends whom he shared his failures with and how they helped him resolve his failure. These friends were in the same industry as he was. His friends helped him with his failure by referring him to blogs and online resources that they thought would be helpful for him. He also indicated that when these online resources were insufficient in resolving his failure, friends who had failed in the same way he did told him the root cause of the failure and its solution. This information, either acquired from online resources or through direct technical help from the targets, allowed him to understand his failure.

6.1.2.2 How to see the failure from a different perspective

Informants also reported on how targets helped them understand their failures by giving them a different perspective. Informant 5 shared her failure with her husband who was also in the same industry and who helped her see her failure from his perspective:

Informant 5: He [her husband] is a software developer. So that means, in my company, I work with software developers. So I would get software from these developers and I would test them. But my husband is in a different company, but his role and my role goes hand in hand. So when I met with the failure, I told him and he tried and help me. But we are after all, not exactly in the same work, but still . . . he made me jump out of myself to see the problem [cause of the failure]. He is of great help.

Interviewer: So he lets you see the failure from another perspective?

Informant 5: Correct, correct, correct, for example, I said “how could the developer do that? They took all of our time as a tester, and now we don’t have time.” Then he would say, as a developer, they have their own problems too, which caused them to use more time on their portion of the project. So this is very helpful for me. It’s similar to this. So we would discuss and try to work things out together.

In the above quotation, informant 5’s husband’s explanation of his view of the failure allowed informant 5 to understand why she had less time for her own project, which ultimately led to her failure in the project. By looking through someone else’s lenses, informant 5 and several other informants in this study were given new understandings of their failures. Informant 5’s husband’s explanation enabled her to understand the situation that led to her failure from a developers’ point of view.

By seeing the failure from a different perspective, an individual is sometimes able to resolve it, but at other times it is not about resolving the failure but about feeling better about it.

Informant 15 and 20 address this:

Some problems are difficult to pin point on your own, but from a by-stander perspective the cause of the problem [failure] becomes obvious (Informant 15).

Informant 20: Sometimes she [his wife] has the benefit of “3rd person clear” [a Chinese proverb].

Interviewer: What does that mean?

Informant 20: When you are stuck in the situation, she would have a better suggestion looking from the outside. . . . So then out of her intuition, she explained to me her understanding of the failure.

By being given a different perspective of their failure, these informants were better equipped to understand their failures. Informants 5, 15, and 20 could not see past their own failure and felt stuck in the situation. But after they shared their failure and heard an outsider (to the failure) talk about their understanding of the failure, the informants gained new understandings of their failure.

6.1.2.3 Documenting failure-related knowledge

Some informants indicated that they found ways to document their failure after they have shared it with others. One way to resolve a failure is by documenting it to get a better understanding of it.

In this study, “documenting failure” refers to a sharer writing down the details of the failure event on paper or in a computer file/blog. Such details could include what caused the failure, and if known, the solutions to the failure. The purpose of documenting failure is to retain information about the event and in some cases, to aid in sharing this failure to others. This act of documenting failure was valuable for the informants. More importantly, informants learned that documentation of their failure was valuable for several reasons. For instance, it forced the individual to work with the failure outside of their own head, which allowed for clearer thinking as it gave an overview of the event. Another benefit of documenting failure was that it could be used for learning purposes. As informant 7 said:

I have learned from this; I recorded this down to help me learn from how to overcome such situations [failures] in the future. I recorded this for my future reference.

In this instance, informant 7 shared her failure, which she managed to resolve, with her friends at work and then she recorded her failure. Informant 7 found value in keeping a record of her failure so that she could refer back to it in the future. Informants who shared their solutions to failures on their blogs not only shared the failure with a mass target, they also documented their failures, sometimes for the benefit of helping others with their failures. For example, informant 31 said:

I think of it more like a journal that I'm keeping for myself to keep a record for myself, that I post on this platform, and it so happens that others are reading it too. And it so happens to help them, and maybe I could meet certain people. On my blog, I have met a more intelligent classmate and I have read his work and he reads mine. Though we don't know each other, I would read his work and this helps me too.

Informant 31 was speaking of his personal blog where he posts articles about his work experience, which also includes his work failures. It is interesting that informant 31 compared his writings to journaling. Mass sharing on blogs encompasses both the personal and public realm of sharing failures. As informant 31 alluded to, he used his blog as a personal record-keeping tool, or journal, but “it so happens that others are reading it too.” This public-private space seemed to have had a push-pull effect on informant 31, but as we will see later, he sometimes regretted sharing with a mass audience (see section 6.2.3, Target re-evaluation). In another example, informant 23 stated that he was not fully aware of the readers of his blog. However, he documented his failure on his blog mostly for his own personal benefit:

[People are] reading [my blog], because there are those stats [on the blog to track number of page views]. Mostly I would know where they are from, or where they entered the blog. But I don't know the other information . . . to write a blog, you need to prepare a lot of things. First, you need to know this failure well, then you need to have a clear conclusion to this failure. And on the blog, you need to write

well, so then, well, it's not like you just write something. You need to write clearly. So there are lots of benefits for the self, you need to understand the failure, the process, and when you write, it lets you reflect on the process and from this reflection, you can learn more. Actually, other than this failure, I think I have new thoughts, new ideas, new ways of writing.

When I asked informant 23 why he decided to start his blog he said,

because I feel [pause], it can be considered, it's actually another friend that asked me to join, and he helped me set this blog up. Because he is also writing in his blog previously. And in his blog he wrote quite a lot and when I read his articles they helped me. And so I thought of starting my own. So now I have gained from his blog and I think it's good, so now I want to help others also.

The idea of a public journal, such as a blog, blurs the borders between the public and private realm of sharing failure. Informant 23 described how he documented his failure on his blog and how the process of documenting the failure was beneficial to him, with the added hope that it would also help his (unknown) readers. He demonstrated that he had few worries about keeping a public journal that contained information about his failure. This theme of feeling safe in an online, mass sharing situation was previously discussed in chapter 5.

6.2 Sharing failure-related learning

Previously I reported on what informants learned about the failure event after sharing it. In this section I report on the lessons that informants learned about the process of sharing failure. Informants revealed that they learned about their sharing failure behavior in three ways: (1) by framing the failure more strategically, (2) through the timing of sharing failure, and (3) by re-evaluating the target (see Figure 14). This section focuses on informants' learning on the interpersonal level, meaning that they learned how to interact with their targets when sharing their failures.

6.2.1 Framing the failure more strategically

One type of change that informants made, or wanted to make, was to alter the way they described their failure to others. By framing the failure more strategically, that is, intentionally, informants made it easier for others to help. For example, informant 19 had this to say about sharing failure:

It is like this, when you approach someone else for help [with the failure], it's like you are there to get help. You can't be too direct and demanding. In such a way, others wouldn't want to help you as much. But if you tell them what kinds of problems [failures] you are facing, and you ask them what are the available methods of solving these, what you have tried so far and what kinds of results you got from trying these methods. You tell them what you have tried and what results you got. Then you tell them your limitations, maybe you do not have skills in a certain area, and you need their help, then they are very clear on how to help you.

Informant 19 made it clear what it meant for him to be strategic about framing his failure.

Firstly, informant 19 developed an explicit awareness that he needed help (i.e., help-seeking), and he realized that he needed to be careful not to be too blunt at this point. Second, he would have to describe his failure, what he has already tried to do to resolve it, and how the target could be of help. This suggests that he had developed an awareness of how to ask for help with respect to the failure. He was careful not to appear too desperate for help but rather indicated that he had already tried to resolve the failure but had been unsuccessful. Another example was informant 12:

Some failures you can't avoid, because you don't have enough experience, so when I first met with this, my thinking was such, that I should apologize that it's my fault. Actually now, I would frame it differently, I would start with where the problem lies, how to solve it, and how to avoid it again. If I don't frame it as such, it would look bad on me. You can of course be very apologetic because it is indeed your fault. Because people don't see the solution, they will only see *you* as the problem. and if there's a similar problem in the future, they will remember you did this before. To make it less personal is what I mean, to talk about the failure at hand, and not at the individual. When there's such a failure, others may blame you, but you need to show them that you are thinking of the solution.

Informant 12 spoke of the importance of making it less personal when sharing his failures with his targets. His strategy of disassociating himself from the failure is almost like denying responsibility as though it was out of his control. He also noted the need to show his targets that he had tried to resolve the failure, so as to reduce the consequences of failure.

The next way in which informants framed their failure was to present it as a “situation,” as informant 21 did:

Now I would present the failure as a “situation,” and I would have a few options when I approach others to ask for help.

Informant 21 learned not to label something as failure but instead as a “situation.” Not only did informant 21 choose a substitute word for “failure”, he also indicated that he would list several options when sharing the failure with his targets, much like informant 19 did.

6.2.2 The timing of sharing failure

Some informants mentioned the importance of sharing the failure sooner rather than later, to minimize risks for the company, as informant 19 states here:

When I have a failure, the faster I let others know of it, the better chances there are to solving the issue, the more I can avoid a bigger mess for others later. So once I see a problem [failure], I speak up. This is very important. This is very important. This is what I learned from this company. At school, I used to think that I'll just report the good parts, but not the bad parts, but at work, I learn it's the opposite. You want to minimize risks, for the long term this is beneficial to myself and also others.

In this quotation, informant 19 speaks about minimizing risks for the company by sharing the failure before it gets worse. This is in contrast to informant 1, who regretted her choice of external target (her friends) and her rush to tell them about her failure (see section 6.2.3, Target re-evaluation below).

6.2.3 Target re-evaluation

Many informants revealed that after sharing their failure with a target, they re-evaluated their choice of target. Informants identified both positive and negative dimensions of targets. It should be noted that these re-evaluations of targets were post-sharing failure, and therefore different than the dimensions of pre-sharing target selection discussed in chapter 5.

Firstly, in this study, informants concluded that they felt they shared their failure with the right target if the target was interested in the failure and also whether or not they received the help they sought. Informant 17 spoke about sharing his failure:

Informant 17: these people are my colleagues, because we have the same language, because they are interested [in the same things]. As long as the other person is interested, I would share [my failure].

Interviewer: How do you know that person is interested?

Informant 17: Because we are working in technology, and if we have a tech problem, I believe others will also be interested.

At the end of the interview, I asked informant 17 to reflect on sharing failure.

Interviewer: Who would you share failure with next time?

Informant 17: Firstly, my colleagues. Because this is also beneficial to our work. Actually, if I have time I would write a page online, or a blog. But right now I do not have the time so I wouldn't. Right, so I would still share with my colleagues and the next step would be to share with the public.

Informant 17 said he would share his failure with his colleagues the next time he failed, and for the same reason, namely, that they would be interested. Informant 17's assertion that he would share a failure with the same targets indicates that he believed his choice of targets to have been the right choice.

Not only was the target the correct one if the target benefited from the sharing, but it was also important that the sharing was beneficial to the informant. For example, informant 22 benefited from sharing his failure with his teacher:

My teacher is a good teacher and very respected for how he teaches his students. He generally doesn't tell me directly how to deal with the problem [failure]. But I like that he tells me what to think, or how to think when I meet similar problems [failures] in the future, and how to find the cause [of the failure].

Informant 22's description of how his teacher helped him indicates that he benefitted from the sharing. In other words, how the sharing helped informant 22 was an indication for him that he had chosen the right target. When I asked if he would share a failure with the same targets again, informant 7 said:

I will think more deeply [about my future targets]. . . . I think it's pretty good, to think, to reflect, to be more thankful and grateful of others [my targets]. . . . Because I think now, my circle [of friends], my network is established, so I would go to them [the same targets] again.

Informant 7 expressed her gratitude to her targets and would share a failure with them again. However, other informants had different experiences. Several informants indicated that they regretted the choice of target. Informant 1 admitted that she had not adequately considered her choice of targets because she did not receive the help she was looking for:

I would not share with my friends again, because I realize that I was too rushed, I regret telling my friends. . . . I thought I wanted to tell them and I did tell them, but after telling, I don't think it's useful to tell them. So next time I won't tell them about such problem [failure] at work.

Informant 1's regret was not a criticism of her targets, rather, of herself. She said that she rushed to share her failure with her friends. Later, informant 1 said she would in the future spend more time thinking about whom she would share her failure, and why:

I regret talking with my friends, I want to give myself more time to consider, to think why I want to tell them my failures. Talking to those outside of the

company, they can see the situation in a simpler way, this allows them to capture the main points.

Another example comes from informant 9, who is a working mother:

Well there are a few stages to these thoughts [of sharing]. At the beginning, I would talk with those colleagues who are mothers. We would discuss or complain about things [failure] together. After a while, I would then talk with those better mothers to talk about these [failures]. I realized that complaining wasn't helpful as it doesn't change your situation [in the failure]. But when you talk with those who are much better than you, even those who are not mothers, you realize that you still need to do your work well, as a woman, you need a good job and to do your best still. After that [realization], I like to share with those who are experts in the field, I don't like to talk with a complainer anymore. So [I share with] people like my leader.

In this instance, informant 9 explained her rationale for not wanting to share with her previous group of targets, other working mothers in her company. She realized that these working mothers did not help her with her failure. A similar example was informant 31's mass sharing on his blog:

Sometimes I get responses that are not what I had expected. How do I put this . . . sometimes you post an article about the failures you faced and how you solved it, and someone might comment on your article saying that he also faced the same problem and used my method but didn't manage to solve the problem, so he keeps asking for my help, to communicate. Actually, most of the time I welcome such comments, but when I am busy at work, I can't answer immediately. So this might give others the impression that I'm not very put together.

Informant 31 makes several points in the above quotation. His intention was for his readers to learn from his way of solving a similar type of failure. However, he found that certain readers wanted more help than he could give and this had a negative impact on his image ("not very put together"). Similarly, informant 25 spoke about the feedback he received from sharing his failure on his blog:

On a blog, others might ask me questions and give me comments. Sometimes people might give me negative comments, so it's very troublesome.

The above quotations demonstrate the unexpected negative reactions from online targets that were problematic for informants. These were the reasons informants regretted their choice of target.

6.3 Psychological benefits of sharing failure

In addition to learning from failure and also how to share it differently in the future, informants also described the psychological benefits of sharing failure. The sub-themes here include (1) perceived as being “normal,” (2) self-appreciation, and (3) emotional release. Generally, these were unexpected gains that informants reported after they shared their failures. For example, an informant might be seeking technical help but end up receiving emotional help as well, which gives the sharer more appreciation for sharing failure.

6.3.1 Perceived as being “normal”

The first sub-theme, “perceived as being ‘normal,’” is about informants realizing post-sharing, that they are not different than others, that is, others have had similar failures.

Informant 4 spoke of this in the context of sharing her failure and asking for help from people in an online forum:

They [online forum members] will help me with their experience, so the more experienced ones in the group will tell me that in our company, the developers do this for example. And this gives me confidence because I now know how others do their work and I’m not different from them [in this situation of failure]. . . . I did read an article recently and it talks about how we consider some situations awkward but others see it with a smile and the problem passes. So just be more thick skinned. If you don’t share your problems [failure], then you won’t be able to solve anything.

After sharing her failure in an online forum for software engineers, Informant 4 realized that she was not different than others, and this comforted her. It was not her intention to seek emotional help from the members of the forum. However, by listening to their explanations of their own failures, she was comforted that her own failure was “normal” and not unique. Similarly,

informant 30 shared his failure with members in an online forum and was unexpectedly comforted:

QQ chat groups, there is a group of people where I've never met, or strangers . . . I would tell [share failure with] strangers. Like those in QQ, I talk with them often [about my failures], but I've never met them . . . [they are] people in the same industry. Those outside [the industry] won't understand your failures. For example, when I had [software] bugs for 2 days, I told them [friends outside of industry] about it, if they are not in the same industry, they might think, "so what?" but those in the industry would know what your problem is. They can understand your stress, they have told me about their bugs too, like "I have a bug that I haven't solved in 5 days," and such comforts would make me feel better.

Both informants 4 and 30 received comfort as they learned about their targets' failures, which were comparable to their own. It was through sharing and talking with other people about their failures (the technical aspects of their failure) that they were reassured.

6.3.2 Emotional comfort

While informants talked through the failure with their target(s), they realized that sharing their failure also helped them deal with their emotions. This is different than the earlier sub-theme "perceived as being 'normal.'" Both sub-themes deal with being emotionally comforted. However, realizing that you are "normal" is realizing that you are not alone in this type of failure. In this study, realizing that you are "normal" is of a technical (i.e. software coding) nature, meaning that it is usually shared with a target who understands the failure and is in the same industry. Emotional comfort, on the other hand, can happen by sharing your failure with a target who does not necessarily understand the failure nor the industry. Also, note that emotional comfort is different than emotional help, described in section 4.1.1.2, Seeking emotional help. Emotional help is longing for consolation after failure, and it is a factor that influences one's decision to share failure with others, whereas emotional comfort is the consolation that is received after sharing the failure with others. Below are a few examples:

Interviewer: So after talking [about the failure] with these friends [outside of work], what do you feel?

Informant 3: In the beginning I felt very down, but after talking with them I felt much better, my feelings, my emotions.

Informant 3 shared her failure with her friends outside of work who were not in the same industry. Her intention was to get help with her failure, but through explaining the failure to her friends and hearing their responses, she was comforted. Another example is informant 28 who shared his failure with his wife who did not understand the failure:

She [wife] listened to me talk about my problems [failures] and she's like my mom too, my mom will listen to me talk and that helps me regulate my emotions.

Similarly, informant 4 shared her failure with her mother who did not understand her failure:

Well, she's my mother, she comforts me. She doesn't understand my job, but she is able to help me relax, I told her my failure and she helped me concentrate my efforts on how to solve it. . . . I would first need to solve my emotional problems before I can work on the technical challenges. I need to be cool, calm and collected when I am finding the solution. So my emotions are most important.

Another example is informant 5, who shared her failure with her husband, who was in the same industry, with the intent of getting technical support, but received emotional help as a by-product:

[Sharing with my husband] helped me think of a solution and it made me feel comfortable, relaxed, very good. [laughs]. Because sometimes when you yourself have been in the project for a long time, you are pressed for time and effort, you have worked long hours, this all affects my mood and feelings. . . . I think it is good to tell him about this failure, to let him have some burdens of mine, I want to find someone to confide in, and someone to help with the issue. Once it is solved, then we'll both be happy.

In sum, the sub-themes of “psychological benefits of sharing failure” that I have discussed show how informants realized unexpected gains by sharing their failure with others.

6.4 Conclusion: Learning from sharing failure

Overall, in this chapter, I have presented themes that addressed the third research question: What do informants learn from sharing failure? Informants learned about the technical nature of their failures, how to approach the failure in order to resolve it, about their failure sharing behavior, and also the psychological benefits of sharing failure, that is, that sharing failure can result in emotional comfort.

Informants benefitted from sharing their failure by learning new technical skills/solutions, receiving new knowledge on how to resolve their failure, and getting recommendations for resolving future failures.

Informants learned about the process of sharing failure and identified several ways that they had modified, or would modify, their sharing. Framing the sharing more strategically was the most often mentioned modification. It involved presenting the failure to the target in a more structured manner. Some informants learned to frame failure as a situation and to describe how they had tried to resolve the failure when sharing with targets. In addition, some claimed that sharing the failure earlier was better than later as it reduced possible damages to the company and was also more beneficial to the self.

Lastly, informants identified sharing their failure as a source of comfort. This was a psychological benefit of an otherwise negative experience of failure. In the next chapter, I identify the theoretical implications of the dissertation and its contributions to scholarly research. Filling in the gaps of learning from failure literature (which implicitly assumes that people share failures at work), this study found that people share failures at work and also outside of work. People share their failures strategically, having thoughtfully selected targets, and they share differently (i.e., different aspect of the failure) with different targets.

7 Discussion

This study set out to broaden the understanding of the experience of sharing work-related failures with others. This final chapter reflects on the entire study, revisiting the overall findings of this study and its contribution to the scholarly understanding of sharing failure. In light of the paucity of research on examining failure sharing at work, this study offers key contributions to the learning from failure literature: it examines the fundamental assumption that failure is shared, highlights the complexity and richness of factors that influence individuals' motivations to share failure, shows how these factors influence the choice of target for sharing failure, and identifies what is learned from sharing failure.

In the previous chapters (chapters 4, 5, and 6), data was presented, and themes were identified and presented. Based on these interpretations, I developed a conceptual model (see Figure 15 below) to depict the multiple factors that influence individuals' decisions to share their failure, who the targets are, and what individuals learned from sharing failure. A discussion about how the findings of this study contribute to related scholarship will be presented. I conclude this chapter by discussing the credibility and rigor of this study, areas for future research, as well as related practical implications.

7.1 Summary of research objectives

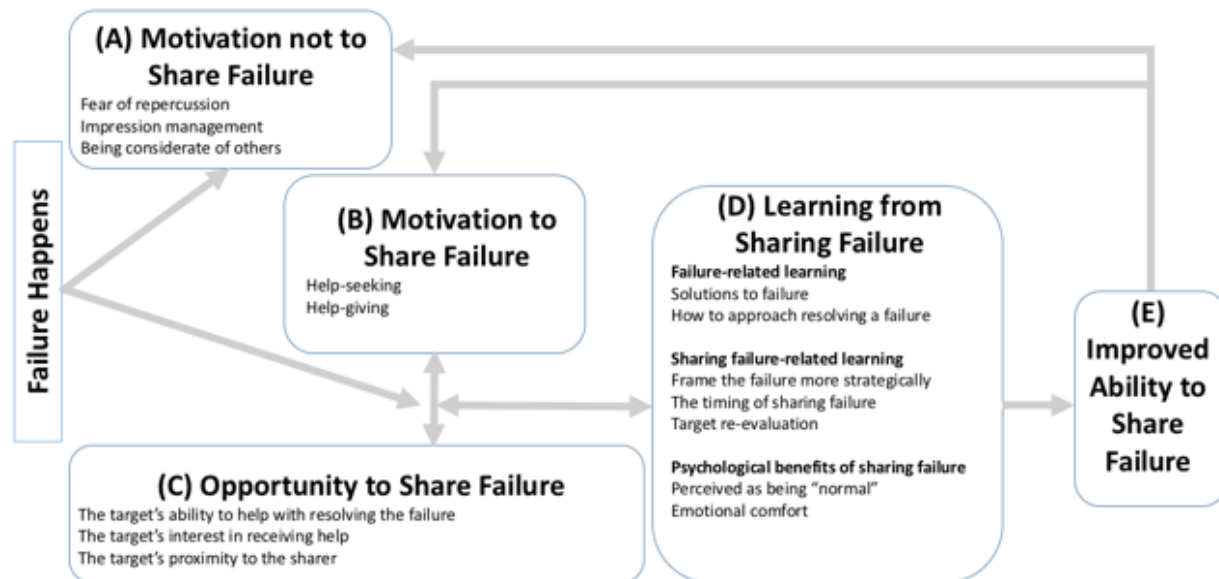
As discussed in chapter 2, a significant amount of attention from management researchers/scholars has been focused on failure in organizations. Sharing an experience of failure is one of the first steps that helps individuals and organizations learn from failure (Argote, 2005; Chuang et al., 2007). Researchers have concluded, based on an implicit assumption, that failures are shared within organizations. This means that little attention has been devoted to understanding the conditions under which individuals share their failures with

others. In this regard, research has largely neglected the most fundamental element in the “learning from failure” story. This is a critically important first step that demands an investigation. There are three goals to this study: (1) to examine the factors influencing why individuals do, and do not, share their failure, (2) to explore the opportunity to share failure (the attributes of targets with whom individuals share their failure), and (3) what individuals (the sharers) learn from sharing failure.

7.2 Key findings of this study

In this study, the research questions are disparate, but the responses to these questions are interdependent themes. This is because sharing failure is a complex behavior with many possible tension points (i.e., decisions to be made) among the various components, starting with the decision to share failure. Other components are target selection and learning from failure and sharing failure, all of which influence future sharing behavior.

To better visualize the findings of this study, I created a conceptual model (see Figure 15 below). In this section, I discuss the relationships and tensions among the components of this model. The model is derived from the findings of the research questions: (1) factors influencing the decision not to share failure (Box A)/factors influencing the decision to share failure (Box B), (2) the opportunity to share failure (Box C), and (3) learning from sharing failure and improved ability to share failure (Box D and E respectively).



5

Figure 15: Failure sharing behavior: A conceptual model

The decision to share, or not to share, failure is target specific. Referring to the conceptual model (Figure 15), the arrows between boxes A, B, and C indicate the tension between the decision to share or not to share. This is because target selection and motivations to share failure (or not) go hand in hand; certain motives will lead sharers to share with some targets, while avoiding other targets. When individuals want to share, they choose their targets based on the attributes in box C. Sometimes a sharer chooses their target based on the quality of the target, that is, trustworthiness and the target's understanding of the issue. In other instances, the sharer chooses the target based on what the target can do for the sharer, that is, connect them with others or with resources. The tension here is a calculative act on the part of the sharer, meaning that the sharer weighs the risks and benefits of sharing and not sharing, and if sharing, the risks and benefits of sharing with target X or target Y. For example, Informant 7 (see section 4.2.1.1, Avoid negative reaction of the leader) discussed the tension she encountered when deciding whether or not to share her failure with her leader. If she decided to share her failure

with her leader, she would have had to consider the risk of being demoted because of the failure she was responsible for. If she decided not share her failure with her leader, she would have to consider the possibility that her failure would become more serious. In the end, Informant 7 shared her failure with her friends as this allowed her to get the technical help she needed, yet still maintain a positive image with her leader.

In some instances, informants shared their failures with work colleagues, while in other situations, individuals shared their failures outside of work (e.g., with family members). Informants revealed that sharing failure for the purpose of getting technical help usually meant they shared their failure with colleagues within the company. This is because their colleagues were the most knowledgeable about the technical aspects of the failure, and the sharers thought their colleagues would be the most likely to be able to help them resolve their failures. In other instances, individuals chose to share their failure outside of work. These types of failure sharing were usually for emotional help. Most of these targets were family members and close friends. However, there was also a fear of burdening loved ones with work-related failures, bringing stress and worry onto them. So there was a balance between sharing one's failure with family and close friends because they were relationally close to you, yet not sharing everything about the failure with them so as to protect them from the negativity of failure. Therefore, it can be said that the target has an impact on the which aspects of the failure are shared/revealed.

Failure could be shared in order to get help (help-seeking). Some individuals approached their targets without any idea of how to resolve their failure, while others approached their targets to share their failures for which they (the sharer) had already found a solution. Both situations of failure sharing were motivated by help-seeking, but from a different level of learning. Those who shared their failures seeking for a direct solution for their failure were

engaged in first-order learning, whereas those who shared their failures in hopes of learning new ways to resolve the failure, were engaged in second-order learning. These are both types of social learning where the sharer learns from others. Because the outcome of failure sharing is related to the target, it can be said that learning from sharing failure is relational. The sharer not only observes the target, but interacts with the target in order to learn from them.

Sharing failure takes place not only for the purpose of help-seeking. This study found that failure can be shared as a way of helping others. Instances of sharing failure to give help were usually about failures that had been resolved, and the sharer wanted to share their experience either because the sharer was being altruistic, saw a need for reciprocity, or saw an opportunity for instrumentalism. In some instances, several of these reasons were present. A common thread can be seen among those who shared failure for help-giving—to maintain relationships with others. There was an on-going relationship between the sharer and target that supports and motivates sharing failure for help-giving. The only exception was sharing failure for altruistic reasons. As mentioned earlier (see section 4.1.2.1, Altruism), altruistic motives have no strings attached, and this would, therefore, imply that the sharer does not intend for a relationship with the target to be established or maintained.

Target selection affects the outcome of sharing in terms of what the sharer learns from sharing failure. The arrows between boxes B, C, D, and E indicate the tension that exists when an individual selects their target for sharing failure. Depending on who the target is, the sharer's learning from sharing failure will either be enhanced or restricted, which also influences the sharer's ability and desire to share future failures. The array of potential targets that the sharer could approach makes this an important decision for the sharer. For example, the choice between sharing the failure with a friend or a colleague depends on the motives of the sharer

(either to seek emotional help or technical help). This choice of target also influences what the sharer can learn from the failure and failure sharing, which has an impact on the sharer's future ability to share failure (boxes D and E). For example, after sharing failure with a colleague, the sharer learns that she should modify the way she frames her failure so as to help the target understand the failure better. This would add to the learning experience of the sharer and improve her sharing abilities in the future (box E).

The lessons learned from sharing failure influence the sharer's future failure sharing decisions as well as future target selection. This is represented by the arrows between box D and boxes A/B/C, which indicate how learning from sharing failure feeds back into future decisions to share failure and also future opportunities to share failure (via target selection). What was learned from sharing failure indicates to the sharer whether or not they made the right decision to share failure and to share with the target they did. A positive outcome of the sharing (e.g., a solution being found for the failure) indicates a right decision and a negative outcome (e.g., the sharer's loss of face) indicates that it was not the best decision to share failure.

Finally, post-failure sharing, sharers reflected on the experiences that influenced their future decision to share, or not to share, failure. Boxes D and E tells about the experiences after sharing failure. In box D, the sharer reflects upon the failure event and on her own failure sharing behavior/experience. This adds to the sharer's experience of sharing failures, which then influences whether or not they will share their failures in the future (boxes E to A shows if they would not share failure again, while boxes E to B shows that they would share failure again).

7.3 Theoretical contributions to the learning from failure literature

In the following sections, I discuss theoretical contributions to the learning from failure literature in terms of learning from failure sharing, learning from failure and the benefits of this, and learning from sharing failure and the benefits of this.

7.3.1 Learning from failure sharing

The learning from failure literature is premised on the implicit assumption that knowledge about failure is shared. However, scholars in the learning from failure field have not yet explored motivations to share failure. The literature provides much information on the source of learning, for example, learning from direct versus indirect failure experience (Haunschild & Sullivan, 2002), coping with failure (Zhao, 2011), and the context of learning (e.g., active learning climate, Katz-Navon, Naveh, & Stem, 2009; learning from after-event reviews, Ellis et al., 2006). However, there is only a limited understanding why failure is shared and who it is shared with. This study found that sharing failure is motivated by three factors: help-seeking, help-giving, and instrumentalism (e.g., reciprocity; box B). Failure is a socially constructed phenomenon that is often viewed negatively. Therefore, it may seem counter-intuitive to share failure for the purpose of help-giving. To share one's failure with another individual to help them means that the sharer had either resolved the failure or wants to warn others of the failure. Who the target of sharing will be is dependent on several attributes of the target (box C), which from the sharer's perspective should be the most suitable to fulfill the reason they shared their failure (e.g., to find help to resolve the failure). I have identified some of the attributes but my findings are not necessarily exhaustive. Therefore, I urge future researchers to further investigate the phenomenon of sharing failure.

7.3.1.1 Learning from others

There has been an emphasis in learning from failure literature on learning from others (Baum & Dahlin, 2007; Haunschild & Sullivan, 2002; Kim & Miner, 2007; Madsen & Desai, 2010). Baum and Dahlin (2007) suggested that learning from others in an organization is dependent on the performance conditions of the organization; when performance deviates from aspirations (i.e., failure), organizations emphasize learning from others' experience. Madsen and Desai (2010) suggested that one way to learn is to learn from others through observation. Organizations require a sufficient base of failure experience to be able to extract and effectively apply knowledge from others' failure (Desai, 2010). Diwas et al.'s (2013) study found that past surgery failures, those of the surgeon's as well as others', improved surgeons' future surgery outcomes. More importantly, these scholars have pointed at a form of observation where the learner does not have direct contact with the source that they are learning from. Therefore, it can be said that the literature looks at learning from others as learning from secondary information.

However, in the context of sharing failure, this study explores learning from others when the sharer and the target have direct contact with each other. In other words, this study highlights sharing failure as a means by which the sharer can learn from others' experiences directly. This is seen in two ways in this study. Firstly, the sharer approaches the target to share their failure in order to seek help (see chapter 4; box B). In this instance, the sharer selects a target for a specific reason because the sharer thinks that the target has the ability to resolve the failure (box C). Perhaps the target has experienced a similar failure and the sharer wants to seek direct help regarding their failure. Here, the sharer wants to find a solution to their failure and identifies a target who has the ability to help. This is learning from others. However, as stated

earlier, it is different than the literature on learning from others as there is direct contact with the source of information.

Another instance of direct learning from others in this study is when the sharer shares their failure in order to give help (see chapter 4; box B). In this context, the sharer shares their failure so that the target can learn from the sharer's experience of failure. The sharer initiates sharing their failure with the intention of helping the target without the target actually seeking this information. An example of this is when an experienced individual warns a junior worker of a possible failure and tells the junior worker of their own failure. In this scenario, the target learns directly from the sharer. This is a form of social learning as people are learning from others, and they are doing so not just by watching but by interacting with others and by listening to others, illustrating that learning is essentially relational.

7.3.1.2 Learning from failure and the benefits of doing so

This study found that learning from failure leads to first-order and/or second-order learning. First-order learning emerges when sharers learn of solutions to their failure (Allert et al., 2004). Second-order learning occurs when sharers find the root cause of the failure and ways to resolve the failure (Allert et al., 2004). These have been discussed in chapter 6 (see box D). Some informants received direct solutions for their failures from their targets. Learning of direct solutions for failure is classified as first-order learning. First-order learning is done when the learner is presented with information, for example, textbooks, lectures, educational films, or instructions (Allert et al., 2004). Relating this to the findings of this study, some informants were given precise instructions on how to resolve their failures, while others were given advice or were pointed in the right direction for a further search for the solution. This difference in the help received from targets also impacts what sharers learned from their failure.

Learning multiple ways to resolve failure may lead to second-order learning as they can trigger higher-order thinking. Dewey's (1933) higher-order thinking refers to reflective thought, which Resnick (1987) described as thinking that involves effort, nuanced judgments, and consideration of multiple solutions. Second-order learning involves higher-order thinking; it involves knowledge creation with the teacher (target) providing scaffolds and methods to the learner (sharer) (Allert et al., 2004). Sitkin (1992) suggested that the benefits of learning from failure are long-term performance improvements as failures draw one's attention to deeper processing of information (e.g., analysis of information) about problems. This has also been shown to be true in this study, as informants not only learned of direct solutions for their failure (first-order learning) but also learned other ways to resolve their failure (second-order learning). For example, some targets pointed informants in the direction of resources that would help them resolve the failure.

7.3.1.3 Learning from sharing failure and the benefits of doing so

Past studies have overlooked what individuals learn from sharing failure and the benefits associated with such sharing, as sharing failure has not been a focus in these studies. This study provides an important opportunity to appreciate what has been learnt through sharing failure and the benefits of doing so. In the sections below, I discuss what sharers learned in terms of sharing failures: first-order and second-order learning, and unintended benefits of sharing failure.

7.3.1.3.1 First-order and second-order learning from sharing failure

This study has found that not only did individuals learn from the failure events, they also learned from the process of sharing this failure with others. Therefore, both first-order and second-order learning were present. In this study, first-order learning occurs when a sharer

continues with prior sharing behavior or makes minor modifications to their sharing behavior. This usually happens when the sharer is satisfied with the outcome of their sharing experience, with a particular target and a specific motive.

Second-order learning was observed in some informants where they learned of ways to modify their future sharing behaviors. These informants reflected on the process of sharing failure (e.g., documenting on a blog), how they shared the failure with others, and the outcomes of this sharing (see section 6.1.2.3, Documenting failure-related knowledge). In reflecting on the process of sharing failure, informants paid attention to the details of the failure, thereby calling for a deeper understanding of the failure. In this study, I assumed that the informants had already recognized their failure and were sharing it with targets. By reflecting on their sharing, informants came to realize what they had learned from sharing failure, and some also modified their interpretation of the failure event (box D). For example, they learned how to frame the failure more strategically for future sharing (see section 6.2.1, Frame the failure more strategically).

7.3.1.3.2 Intended and unexpected benefits of sharing failure

Sharing failure is a way to learn from failure by acquiring access to others' experience. At the same time, sharing failure provides benefits related to learning. This study revealed that benefits can be intended or unexpected, such as receiving emotional support or technical help from targets whom the sharer did not expect to have such attributes. Specifically, informants revealed that on some occasions, they received more than they had intended. I labeled these "unexpected benefits" of sharing failure. For example, when informants 4 and 30 shared their failure online in forums, their intention was to seek technical help from their targets. However, after sharing their failures, the informants realized that their failures were seen as "normal"

(where they saw that their own failures were a common occurrence and that the failures were not new to others), in addition to the technical help that they wanted. Informants 4 and 30 saw their failures differently once they found out that other engineers also faced the same challenges as they did; this comforted them emotionally. The idea of unexpected benefits of sharing failure shows that sharing failure sometimes provides benefits that the sharer did not expect to receive. It also shows that the sharer sometimes does not have a complete understanding of the full capabilities of their targets. In the above example, targets offered both technical help and emotional help in the same instance.

7.3.2 Motivation and target selection

In the following sections, I discuss how this study adds valuable knowledge to the literature on learning from failure with regards to the relationship between motives for sharing failure and target selection.

7.3.2.1 The relationship between motives and target selection

This study found that there is tension between the motives for sharing and target selection, such that certain motives lead some sharers to share with some targets while avoiding other targets. Scholars who study learning from failure on an individual level tend to ask whether individuals can learn from failure and focus on individual and organizational factors that influence learning at the individual level (Chuang et al., 2007; Dahlin et al., 2018; Zhao, 2011). This study builds on this line of inquiry by focusing on why individuals want to share failures and whom they share them with. In other words, this study goes beyond individual and organizational factors by exploring how interpersonal relationships affect sharing failure and ultimately learning from failure.

In learning from failure literature, an individual's perception of psychological safety and the quality of their relationships with others in an organization are positively associated with failure learning (Carmeli & Gittell, 2009). High-quality relationships, which are manifested in shared goals, shared knowledge, and mutual respect, not only promote psychological safety but also enhance information processing and coordination capacity, which in turn have positive effects on the capacity to learn from failure. What Carmeli and Gittell (2009) called "high quality relationships" is looked upon differently in this study. Carmeli and Gittell (2009) looked at high-quality relationships at the team level. This study looked at interpersonal relationships at the dyadic level and how this influences individuals' decisions to share their failures. This study adds to this conversation by examining how the sharer and potential target influence the decision to share and the dyadic relationships of sharing failure. It does this by highlighting how certain attributes of targets influence whom the sharer chooses to share their failure with (box C). All of these influence the sharer's choice of target.

7.3.2.2 Interpersonal risk of sharing failure

The risks associated with sharing failure are linked to motives not to share failure (box A): the risk of negative repercussions, the risk of damaging one's image, and the risk of upsetting the present relationship with the target. However, sharing failure is a calculated act in which the sharer needs to consider the benefits and risks when choosing each target. For example, if the sharer decides to share in order to get help for their failure, they may weigh the risks between sharing with a colleague (and perhaps get mocked for having failed) and sharing with a friend outside of the company (not getting mocked but getting less knowledgeable help in terms of software coding). Not only did this study reveal the factors influencing the motives to share failure, it also identified factors influencing motives not to share failure (boxes B and A

respectively). All of these findings show that sharing failure is risky and is a calculated decision.

This study identified a new risk-taking behavior related to sharing failure—the risk that is embedded in the relationship between the sharer and target. Sitkin (1992) suggested that success tends to support the status quo, while modest failure promotes a willingness to take risks. Sitkin was referring to the risk that comes with trying something new. Zhao and Olivera (2006) described error reporting as a “discretionary and potentially risky behavior” (p. 1015), which makes it a calculative act. They focused on the errors that have to be reported (as mandated by the organization). As explained by Dahlin et al. (2018, p. 254), errors differ from failures as “errors are incorrectly executed tasks or routines, and failures are observable undesired performance outcomes. Errors are deviations from the correct execution of a task or routine. Failures are deviations from successful operations.” This study focused on another type of risk-taking—the risk associated with sharing failure. Those who chose to voluntarily share their failures are taking the risk of exposing their failures to the targets (e.g., getting punished for the failure), as well as related risks (e.g., burdening their family). By being selective in their choice of target, the sharer is lowering these risks. In other words, this study shows that risk is embedded in the relationship (e.g., how does risk impact a person’s motive to share, and how does this influence whom they share their failure with?). This interpersonal risk is embedded in the sharer’s relationship with the target. The sharer may consider how their image will be impacted after sharing the failure with the target. This is in contrast to the individual-level risk that literature points, for example, Sitkin (1992) spoke about how failure increases an individual’s risk tolerance.

When speaking of potential consequences of sharing failure, one of the factors influencing the decision not to share failure is the fear of repercussion (box A). Research on learning from failure has focused on the effects of the fear of repercussion in the team (Buljac-Samardžić & Edmonson, 1996; Carmeli & Gittell, 2009). However, this study has shown that fear of repercussion can be target specific. For example, an individual chooses not to share their failure with the group leader for fear of being punished at work. But this same individual may share their failure with a friend because in that context, the fear of repercussion is less. This also applies to other motives for sharing failure. For example, sharing failure for help-giving can also be target specific, as the sharer wants to share their failure with a target whom the sharer thinks will benefit from the sharing. In this study, those who shared their failures for help-giving usually chose targets who were less experienced than themselves. This made it possible for them to warn the target of the possible failures ahead as they related to their own failure. In addition, sharing failure for help-seeking was also target specific as sharers chose targets whom they thought would be able to help resolve their failures (box C). Also, in section 4.2.2, Impression management (box A), individuals would not disclose failure if it hurts their image, therefore controlling what information about the failure is disclosed or shared. This means that informants chose not to share their failures with certain targets to avoid embarrassment or a loss of face.

Importantly, these findings suggest that to share or not to share with a particular target is in part influenced by different factors. As sharing failure is a risky act, deciding whether or not to share failure and with whom may be tension filled.

7.3.3 Opportunity to learn

In this current study, learning takes place on an interpersonal level, embedded in the network of potential targets for sharing. In the literature, opportunity to learn refers to the scope of information and the time that is needed for individuals to learn from failure events (Dahlin et al., 2018). Time-based and information-based opportunities to learn from failure have been the focus of previous studies. At the individual level, the question is whether individuals have time to reflect upon failure events, to carry out a failure-related task, and to learn from it (Carroll, 1963; Shepherd et al., 2011). As for information-based opportunities to learn, Argote (2012) asked the question of whether the individual learns from their own or others' similar failures. Iedema, Jorm, Braithwaite, Travaglia, and Lum (2006) argued that knowledge-based failures require intentional reflection to reduce the likelihood of repeating them in the future. Diwas et al.'s (2013) study found that past surgery failures, those of the surgeon's as well as others', improved a surgeon's future surgery outcomes.

This study adds to the literature as it reveals the opportunities of interpersonal relationships embedded in the network of targets. This means that an individual's (sharer) failure learning is dependent on their network of potential targets. The network of potential targets can greatly affect the individual's learning from failure. Specifically, timely access to potential targets helps the individual learn from failure quickly. A diversity of potential targets allows the individual to acquire the information needed to resolve their failure and learn from it. Furthermore, linking to the idea of learning from others (see section 7.3.1.1, Learning from others), the sharer needs to establish direct contact with the target to be able to share the failure and then learn from it. If an individual does not have the means to reach a potential target, the opportunity to learn from the failure is lost because the failure was not shared. In other words, I

argue that sharing failure is the first step to learning from it. Without sharing the failure, the potential target cannot know about the failure and, therefore, cannot provide help to the individual who failed. This scenario is also true for help-giving situations of sharing failure. When an individual (the sharer) intends to share their failure as a way to help others, the opportunity for learning (for the target) can only happen if the sharer shares their failure with the target.

7.4 Theoretical contributions to knowledge sharing literature

In the sections below, I discuss the theoretical contributions that this study adds to knowledge sharing literature: motivation and target selection, ability to share, and opportunity to share.

7.4.1 Motivation and target selection

In the sections below, I discuss the contrast between this study and prior studies in knowledge sharing literature, regarding the motivation to share and target selection.

7.4.1.1 Motivation to share failure

In the firms I studied, sharing failures was not mandated by work places. The informants self-initiated the sharing of their failures with others. This means that there was a sense of intrinsic motivation that spurred failure sharing in general, whether as help-giving or help-seeking. Because each of the informants saw that it was their responsibility to resolve their failure, they were motivated to find the help they needed. In contrast, past studies have focused on the perspective of the organization and how it motivates employees to share knowledge. For example, Ipe (2003) identified three factors critical to knowledge sharing among individuals in organizations: the nature of knowledge, the motivation to share, and opportunities for sharing.

The idea of being motivated to share is echoed by other scholars (Hendriks, 1999; Wang & Hou, 2015).

Wang and Hou (2015) found that knowledge sharing behavior was positively influenced by the quality of motivation, which was generated by hard rewards, soft rewards, or being altruistic to benefit the organization. If the quality of the motivation to share knowledge is not high, especially when dealing with tacit knowledge or knowledge that is difficult to codify, an individual will be less likely to share knowledge. Deci and Ryan (2000) stated that when a type of behavior is not inherently interesting or enjoyable for an individual, the main reason the individual performs such a behavior is because this behavior is valued by and/or beneficial to significant external entities to whom they feel connected, such as the organization they work for. Therefore, it is important that the organization communicates the value of knowledge sharing to its employees.

Lin (2007) found that on some occasions individuals were willing to share their knowledge because they felt satisfied or pleased by seeing the positive results of helping others (i.e., being altruistic for personal satisfaction). Contrary to Deci and Ryan's (2000) finding, Lin (2007) found that motivational factors such as reciprocal benefits, knowledge self-efficacy, and enjoyment in helping others were significantly associated with employee knowledge sharing attitudes and intentions. Similar to Lin's (2007) finding, this study found that one of the motivations to share failure was help-giving (box B). It is interesting that in both contexts (knowledge sharing and failure sharing) altruism is a component.

Weiss (1999) found that reciprocity, or the mutual give-and-take of knowledge, facilitates knowledge sharing if individuals see that their value in the organization depends on the extent to which they share their knowledge with others. Reciprocity in Schulz's (2001)

study was a motivator of knowledge sharing, implying that individuals must be able to anticipate that sharing knowledge will prove worthwhile before engaging in it. Similarly, in this study, some individuals shared their failures as a reciprocal exchange with the target; the target had previously helped the individual (the sharer), and now the same was done for the target. In addition, this study also found that some individuals shared failure with others even when they did not expect anything in return.

Foss et al. (2009) found that job characteristics (e.g., autonomy) determine different motivations to share knowledge, which in turn predict employees' knowledge-sharing behaviors. In this study, a trend can be seen with those who are managers or leaders at work. They tended to share failures in order to give help, as they saw areas of failure that they did not want their subordinates to repeat. This finding agrees with Foss et al.'s (2009) finding that characteristics, such as job autonomy, motivate knowledge sharing.

7.4.1.2 Target selection of failure sharing

This study found that the proximity between the sharer and target has an impact on target selection for failure sharing. This proximity is important when emotional help is needed from the target as the relationship (proximity) between the sharer and target impacts the outcome of failure sharing. This study extends this idea to look at the sharer's physical proximity to the target (i.e. physical distance). It means that they are in the same work place and could have easier access to each other. Szulanski (1996) emphasizes the importance of a good working relationship between the knowledge source (sharer) and recipient (target). A transfer of knowledge is likely to be an interactive exchange between parties. Therefore, communication is inevitable. Szulanski (1996) termed laborious and distant relationships as "arduous," which he found to be a barrier to knowledge sharing.

In other instances of physical proximity, some informants refused to share their failures with family members (e.g., a spouse) as they did not want to strain their relationship. This demonstrates to us that having close physical proximity with others such as your spouse, does not necessarily mean that failure sharing will happen. This adds to our understanding of the importance of good quality relationships; to protect a relationship sometimes means to not share failure.

Liu and Liu (2011) state that the sticky nature of knowledge as a barrier to knowledge sharing causes the sharing processes among individuals to be slow, costly, and uncertain. They found that employees prefer to acquire knowledge from, and share knowledge with, their team members as a way to reduce the stickiness of knowledge sharing. This implies that familiarity among team members fosters productivity. This finding was also supported in this study, where informants shared their failure with targets in close proximity (e.g., team members) or with targets whom the informant perceived as being knowledgeable about the failure. In the context of this study, informants tended to select targets who were also software engineers. It should be noted that this applies to sharing failure for help-seeking and help-giving only. With regards to sharing failure for emotional support, the network of targets was not limited to those within the field, but rather, how much the potential target could emotionally support the sharer.

In addition, knowledge sharing literature has not looked at the emotional aspects of knowledge sharing. This study borrows from knowledge sharing literature as it forms a foundational understanding of the behavior of sharing, but I am not equating sharing failure with sharing knowledge. However, I see the value of knowledge sharing literature where we can learn about the motivations to share and how one decides whom to share with. This study found that sharing failure is in part a way to gain emotional help from targets (boxes B and D). If the

sharer is motivated to share their failure to gain emotional help, they would consider whether the potential target is going to understand them and not mock them for the failure.

7.4.1.3 The interpersonal risk of sharing failure

Previous studies have identified the individual risks of knowledge sharing. In this study, the risk involved with sharing failure was interpersonal; the informant considered the risk to their reputation if they shared their failure with the target. Instances of not sharing failure with a particular target because of the uncertainty of how the target would react, were found in this study (box A). Also, when the informant decided to share their failure with the target, the informant risked a negative response or outcome.

Knowledge sharing has gained popularity over the years as organizations begin to see the value that knowledge brings to their competitive advantage (Davenport, 1997; Hendriks, 1999; Nidumolu et al., 2001). Many scholars argue that knowledge originates in the minds of the holder (Alvesson, 1993; Gupta & Govindarajan, 2000; Nahapiet & Ghoshal, 1998). This belief is consistent with the definition of knowledge given by Davenport and Prusak (1998) and Nonaka and Takeuchi (1995): knowledge is a personal interpretation of new information (new to the receiver). With such a mindset, knowledge-sharing scholars see knowledge as being a competitive advantage. At the individual level, one of the factors influencing motivation not to share one's knowledge with others is the risk of losing this competitive advantage over others. There is a sense of competitiveness here (Bock & Kim, 2002; Connelly et al., 2012).

On the same note, Empson (2001) indicated that in organizations in which an individual's knowledge becomes their primary source of value to the firm, sharing this knowledge potentially results in diminishing the value of the individual, creating a reluctance to engage in knowledge-sharing activities. A negative aspect of reciprocity is the fear of

exploitation, which has been found to be a serious threat to knowledge sharing among individuals (see especially Empson's study [2001] where these participants were in the middle of either a company merger or acquisition). Empson (2001) also showed that the fear of exploitation was a reflection of the extreme anxiety that individuals experience when they are being asked to share valuable knowledge with very little or no benefit to them. In this study, I focused on voluntary sharing of failure. Therefore the risk of not following their organization's mandate to sharing was non-existent for informants. Also, the intrinsic motivation to share failure was seen as either beneficial to oneself (e.g., help-seeking) or others (in instances of help-giving).

7.4.2 Ability to share

In this study, the ability to share failure refers to the extent to which an individual has the know-how to communicate the failure to the target. In knowledge sharing literature, the term "ability" could refer to several facets: the absorptive capacity of the knowledge receiver, level of education, or literacy rate of the sender and receiver, mindsets and assumptions, and their cultural understandings (Kelloway & Barling 2000; Szulanski 1996). Past studies have not considered the ability to share failure in terms of an individual's capability to undertake such sharing.

In this study (chapter 6), the sharer's ability to share failure is not static, and it can be improved in two aspects with more experience of sharing failure: ability can be improved in solving failures and in sharing failure more strategically (box D). This ability is part of learning and influences the sharer's experience of sharing failure. Over time, the sharer will be able to share failure more efficiently.

Ability is also demonstrated in what the sharer gains from sharing failure with others. After sharing failure and having reflected on the sharing, the sharer may gain more knowledge about the failure (i.e., failure-related learning), which increases their know-how of better communicating future failure with a target (i.e., being better prepared to share failure). Also, an individual may gain new insights about sharing failure behavior (i.e., modifying sharing failure behavior), which would enable them to improve their sharing ability in the future (box E).

7.4.3 Opportunity to share

To share failure, individuals need to have the opportunity to share (box C). Opportunity to share failure in this study refers to the extent to which an individual has a network of targets and the opportunity to share failure with targets.

In order to mitigate the negative implications of failure and to learn from it, an individual may choose to share their failure with those who have less impact on the individual's image or reputation and those who have higher potential to provide learning benefits. Within the sharer's network of targets, they must be selective with whom they share their failure.

Influencing this selection is the sharer's perception of whether the target possesses certain evidence of their characteristics that encourages sharing (Box C). The sharer evaluates each target based on certain attributes. These are what I call "influences on the choice of target." The target(s) would need to be accessible (i.e., in the sharer's network of targets) to the sharer if sharing is to take place. For example, to seek help with the failure, a sharer needs to share the failure with a colleague. In the literature, opportunities can be created. In knowledge sharing literature, an opportunity is described as an exogenous element that is posited to enable a person to act (Rothschild, 1999). Therefore, organizations can orchestrate/create the opportunity for employees to share knowledge by establishing work conditions that facilitate knowledge

sharing. These can be realized through the proximity of employees at work, job design, investments in information, and knowledge management systems (Borgatti & Cross, 2003).

Accordingly, this study questions whether opportunities are created or provided in the context of failure sharing. This study found that the opportunity to share failure could be both created and provided. For example, if an individual decides to share their failure with a friend, the opportunity is provided because the sharer already has the contact information of the target. Informants said that failure sharing sometimes takes place over a meal with friends. On the other hand, if an individual wants to seek out contacts through another person, they will need to create the opportunity to share. For example, in section 5.1.3, Target's social capital, the sharer hoped that the target would have a network of people who would be able to help with the failure and that the target would be able to recommend these people to the sharer. The sharer created the opportunity for sharing their failure via the target's contacts.

7.5 Rigor of this study

A qualitative researcher ensures rigor or trustworthiness by achieving credibility, transferability, dependability, and confirmability (Marshall & Rossman, 2011). Scholars have proposed several techniques to ensure of these standards are met in qualitative studies. One strategy used in this study to ensure trustworthiness of the data was to perform "member checks" (Guba & Lincoln, 1989), in which the translated interview transcript and my interpretation of it were shared with two informants to discuss the interpretation of some of the failure sharing themes that had emerged in their interview transcripts. I explained how the codes were derived and which parts of the interview transcripts belonged to which code(s). Their reaction to seeing their interview in words confirmed for these informants that what they said in the interview had been heard correctly. The feedback I received from these two informants was

informative. This technique was, however, very time consuming, and informants were pressed for time. However, this proved to be useful in the data analysis. For example, as the researcher, I was able to confirm that informants were speaking to their failures, but had used euphemisms such as “challenge,” “problem,” or “situation” to mask the negativity of failure. Another strategy was to discuss my findings with colleagues who had some familiarity with the topic where they offered some feedback about the interpretation of the data. Maxwell (1996) recommends this strategy as a substitute for member checks.

Kvale (1989) argued that trustworthiness in qualitative research is embedded in the research process itself, laced into every step of the investigation to produce a solid and rigorous study. In other words, because qualitative research is iterative where the researcher moves back and forth, to ensure consistency and congruence between question formulation, methodology, data collection strategy, and analysis, “focus is maintained and the fit of data and conceptual work of analysis and interpretation are monitored and confirmed constantly” (Morse, Barrett, Mayan, Olson, & Spiers, 2002, p. 10). Attending to Kvale’s (1989) requirement of trustworthiness, I added the verbatim quotations of the informants in the findings, and used these quotations as examples throughout the dissertation to back up the findings. For situations where the context of the conversation was important for understanding the quotation, contextual details such as background information were added.

The findings are trustworthy because I dealt with contradictions within the data. By reporting inconsistencies where they appeared, this study was much more rigorous and trustworthy. Also, internal validity can be strengthened in qualitative research by paying detailed attention to how the data have been analyzed (Richardson, 2017). A key focus in the data analysis of this study was to engage with the data critically. I looked for data that

challenged potential findings as well as those that supported it. I looked for data that shed light on why informants sometimes shared failure with their leaders, yet at other times shied away from sharing failure with their leaders. In other words, I looked for data that might falsify findings and those that resolved conflicts and contradictions between findings and raw data. Silverman (2006) called this the “constant comparative method” where the researcher compares the identified themes with what the informants have said. In addition to the above strategies, Maxwell (1996) suggests that the data in qualitative studies are themselves an excellent check of validity because they provide the reader with rich information and thick description on which interpretations are drawn. Thus, the many quotations presented in this study allow readers the privilege to judge for themselves the soundness and validity of the study.

It has come to my attention that the findings presented in this study are rather positive. Some might be surprised or even question why the topic of failure has such a positive image as I have painted. One possible reason for such positivity among the informants is the nature of the industry. Computer science, or software engineering, is an industry that encourages sharing. The concept of “open source” software was created by software engineers who wanted to promote collaboration with other software engineers in a public manner. It could be that this environment of sharing influenced the informants’ work culture and behavior, which then increased their sharing opportunities, whether that is sharing innovative ideas or failures. Having said so, the findings of this study could be different if another set of informants was studied. This is the uniqueness of qualitative studies, where each group of informants have their own stories about their lived experiences. If I was to study software engineers in North America, I may find fewer instances of sharing one’s failure to help others, only because the North American work culture tends to be more individualistic as compared to the Asian work

culture. Or if I was to study a different industry, perhaps manufacturing firms where many procedures are standardized (e.g., SOPs), would I see the same patterns of failure sharing?

The potential for single researcher bias is present as I was the principle data coder. However, this bias has been reduced as the supervisor and dissertation committee challenged my interpretations of the data and played devil's advocate in many instances.

Because the interviews were conducted in Mandarin, I had to translate them into English. Certain concepts in Mandarin cannot be fully translated into English. However, to increase the credibility of the translation of the interviews, I consulted knowledgeable Mandarin language friends, colleagues, and my supervisor, as well as used the internet app, Google Translate, to help me come up with the best English translation. I also back translated from English to Mandarin.

Because this study was conducted in China, the results may show cultural influence. Therefore, it would be worthwhile to investigate failure sharing behavior in other cultures.

7.6 Theoretical implications of this study

In the next sections, I discuss the theoretical implications of this study. These are areas that the data from this study *loosely* suggest, but require future investigation for confirmation.

7.6.1 Recursive process of sharing failure

Empirical studies on learning from failure have tended to view such learning as a non-recursive process. However, while it was not the intent of this study to explore if learning from failure is recursive, the findings do imply that sharing failure can be recursive: a failure is shared, the sharer learns from the sharing, and this learning adds to the experience of the sharer, which in turn influences the sharer's future sharing behavior. Specifically, an individual's motivation to share failure influences their target selection. After sharing the failure, the

individual reflects upon what has been learned from the sharing. These learnings then add to the ability to share failure in the future, which informs the individual's failure sharing behavior (how and with whom). For example, Informant 18 (see chapter 6) was motivated to share his failure as a way to seek help. He considered the colleagues around him and decided that a particular colleague had the appropriate skills to help him and proceeded to share his failure with this colleague. After sharing the failure, informant 18 received the solution to his failure and also more resources (such as alternative software programs) that would be helpful for the future. These lessons would be useful the next time informant 18 encounters failure and wants to share it.

Or another example: informant 4 (see chapter 5) failed at work and was motivated to share her failure as a way to seek emotional help. She considered the colleagues around her and decided that none of them would understand. She then considered sharing with her close friends outside of work. After sharing her failure with them, they comforted her and told her of their own failures at work. Informant 4 realized that these friends would be good targets for future failure sharing when she was again in need of emotional support. Although this study has identified independent dimensions of sharing failure, these dimensions are in a recursive relationship in which they influence each other. This suggests that sharing failure is recursive in that what a sharer learns from sharing affects their future sharing behavior in terms of their ability to share, motivation to share, and target selection. A more systematic examination of such a process would advance our theoretical understanding of sharing failure and learning from failure.

7.6.2 Stability of the sharer's network of targets

This study loosely implies that those who have more work experience, have a bigger network of possible targets for sharing failure. However, it should be noted that although they do know more people and therefore have a larger network of people whom they are affiliated with, these acquaintances do not necessarily all become failure sharing targets. This suggests that failure sharing targets are selected specifically. Past studies have not considered the target of knowledge sharing as a network that is evolving as more experience of failure sharing is gained. This study implies that the more experience the sharer has with sharing failures, the more established their network of targets is, which expands their opportunity to share failure.

To begin, target re-evaluation (see section 6.2.3, also box D) influences the sharer's opportunity (box C) and motivation (box A and B) to share failure: The interaction between opportunity and motivation to share failure is such that if an individual decides that the target was the correct person to have shared with, this would motivate them to share failure again, and possibly with the same target. If the individual decides that the target was the wrong person to have shared with, their motivation to share failure again may be reduced or they may reconsider their target. This also reinforces/restricts the sharers network of targets for future sharing opportunities, that is, either to share with the same targets again or to search for a new target. As an individual's experience of sharing failure increases, the individual's network of targets becomes more firmly established and the individual is more likely to seek out targets from within this network for future sharing.

To explain this, let us consider the work tenure of the informants. Those who were junior in their work experience shared differently from those who were senior (i.e., more than 10 years of work experience in the software industry). One main difference was that the junior

engineers tended to share with more targets (casting their nets wide) and shared with online targets more often than senior informants. A possible rationale for this is that junior employees had not yet validated their network of contacts. The next question to ask is: does an individual's network of targets expand over time or does it shrink and become more consolidated with experience? This study loosely suggests that although those who have more work experience have a larger network of people with whom affiliate, their acquaintances do not necessarily all become failure sharing targets. This suggests that failure sharing targets are a very specific selection of people. It appears that with more work experience and failure sharing experience, an individual's network of targets becomes smaller, but the contacts have been proven to be good targets for sharing. For junior employees, it seems that there is a need to share failure with more targets because a single target may not have sufficient knowledge to be of help. Also, with more work experience, senior workers have targets who are on par with their own level of expertise and experience. This could be translated into better quality help, hence improving the sharer's ability to share future failures. Box D shows that the sharer learns how to modify their failure sharing behavior, which has an impact on the sharer's opportunity to share failure (box C) in the future. As discussed in this paragraph, the more experience the sharer has with sharing failures, the more established their network of targets is, which, in turn, expands their opportunities to share failure.

7.6.3 Using euphemisms for “failure”

In knowledge sharing literature, there is little focus on differentiating between success and failure. However, there tends to be an assumption that knowledge that is shared is about know-how (i.e., know-how about operating a machine). However, in this study, the content of failure sharing is not only about know-how, but also failure, which is the absence of know-how.

Knowledge sharing literature does not differentiate failure from success in sharing. In this study, the words that were chosen by informants in lieu of “failure” reveal the difficulties of sharing failure. However, once informants found a way to overcome such difficulties (e.g., by calling the failure a “situation”), informants’ ability to share their failures improved, and their motivation to share failure also increased. With an improved ability to share failure, informants were more motivated to share their failure. Many of the informants in this study stated that they would share their failures again in the future.

In addition to toning down the negativity of “failure” (see section 6.2.1, Frame the failure more strategically; box D), informants spoke about how they framed their failures in a certain way so as to keep a distance from the harshness of “failure.” Informants chose to use the word “situation” rather than “failure.” It could be that “failure” was too personal and by calling it a “situation,” sharers were able to distance themselves from the negativity that comes with failure. This may seem contradictory to the finding that sharing failures has positive outcomes, yet informants chose to distance themselves from the harshness of failure. Note that the failure event remains harsh, and one way to reduce such harshness is to find a solution for the failure, hence the motivation to share the failure to get help.

Learning from failure is a dynamic process that increases an individual’s future ability to share failure. This means that what has been learned from previous failure sharing experiences helps inform current and future failure sharing behavior. It was evident in the interviews I conducted that informants had learned from previous sharing experiences and were using euphemisms for the word “failure” intentionally. The words “problem” and “situation” were often used instead of “failure.” In addition, informants may have used euphemisms of “failure” to ensure a certain presentation of themselves and to keep up their self-esteem. Failure has a

negative connotation, and sharing failure with me, a stranger, may have affected how they thought they would be perceived. To reduce potential negativity or situations of awkwardness, some informants chose to use euphemisms in the interviews.

7.7 Limitations and future research

One of the main criticisms of qualitative research is whether the findings can be generalizable. Such concerns are based on the perceived problem of ‘statistical generalization’ premised on a belief that empirical studies should be able to account for phenomena not only in the setting in which they are carried out but also in other relevant settings (Richardson, 2017). While qualitative studies, such as this, might not be, and does not intent to be statistically generalizable, we can turn our attention to ‘analytical generalizability’ or ‘transferability’ of the findings. This is where one judges the extent to which the findings of one study can be generalized to other contexts (Leung, 2015). The transferability of my study and the conceptual model in particular, may be subjected to the boundary conditions of the scope of my study. Specifically, my sample consists of software engineers in high-tech companies where creativity was valued and failure was tolerated or encouraged. Also, I did not explore how power relationships embedded in the organization’s hierarchy might influence failure sharing behavior and learning. It is possible that the relationships within my conceptual model might change in different settings such as different industries (e.g. health care), organizational culture (e.g. failure avoidance) and organizational hierarchy (e.g. power differences). Future research may want to examine my conceptual model to better understand if the relationships between components vary across different industries, organizational culture and hierarchy; and to explore other factors that may influence failure sharing behavior and learning processes.

If other scholars were to use this study as a platform for further research, there are a few gaps that still need to be addressed. Past research has suggested that the nature of failure plays an important role in learning (Chuang et al., 2007; Haunschild & Sullivan, 2002). However, this study's data did not draw out sufficient findings regarding the types of failure that influence target choice. For example, does the magnitude of the failure affect who the target is? Further investigation on the different dimensions of failure (e.g., the magnitude of failure) and how these have an impact on the behavior of sharing failure is needed. In this study, the informants' failures ranged from low-impact failures (e.g., not meeting a deadline) to high-impact failures (e.g., having the project rejected). This study was undertaken in the high-tech industry. There is potential for exploration of other contexts of failure and how the sharing of failure differs/is similar in those contexts.

The frequency of failure can also have an impact on how failure is shared and the learning that come from it. This study was unable to capture the frequency of failure, as informants found it difficult to accurately quantify failure occurrences. However, failures occur on a regular basis. Therefore, future research could ask whether a high-frequency rate of failure encourages more learning from failure. Or does a high frequency of failure numb or normalize us towards it, therefore limiting the learnings from it? If an individual encounters a high frequency of the same type of failure, they may not have learned from their failures, and this may alter the motivation to share failure and target selection (i.e., the individual may only want to share their failure with a target who does not know of their past failures, so as to hide them).

On a different note, considering that learning from failure is a recursive process that feeds back into sharing failure, it may be that the more frequently an individual encounters failure, the more likely they are to establish a network of targets to share with. This means that

learning from failure also increases as failures are shared more often. Also, the sharer's network of targets might evolve over time due to the frequency of failure or to the tenure, or experience, of the sharer. With every experience of failure, sharing failure, and failure learning, the sharer evaluates the instance of failure sharing and the chosen targets. If the sharer deems that a target was not suitable or did not provide the help needed, then this target will likely not be chosen again. In this way, the sharer's network evolves over time. However, this would need to be investigated in future studies.

In knowledge sharing literature, scholars such as Szulanski (1995) acknowledge that the knowledge recipient (i.e., target) is also an important factor in knowledge transfer. Similar to the knowledge source (i.e., sharer), the motivation level of the recipient (i.e., target) needs to be on par with the source's before mutual sharing can occur in situations of help-giving (Szulanski, 1995). Similarly, in chapter 5 of the findings, I identified the attributes of targets who were chosen for failure sharing. There is still room for studies to explore the attributes of those who are not chosen as targets. This could be an area for future research as it would be valuable to know not only why failures were not shared but also if the motives to not share were linked with specific characteristics of people (e.g., would you share your failure with a competitor?) This would be theoretically beneficial as future researchers could predict which attributes were desirable and which ones were undesirable. There might be a link between the undesirable attributes of targets and the motives for not sharing failure, as seen in box A.

Another way to expand on this study would be to study the outcome of failure sharing from the perspective of targets: what did they get from the sharing? This study investigated failure sharing behavior and outcomes from the sharer's point of view. Szulanski (1995) suggested that the absorptive capacity of the recipient (i.e., target) also affects the process of

knowledge sharing. The knowledge shared would need to be retained by the recipient before it would become an effective piece of information to be shared (Szulanski 1995). In this study, informants mentioned that they would consider sharing with a target whom they thought would benefit from and have an interest in their sharing (see section 5.2; see also box C). Knowing this, researchers could expand the study to investigate the outcomes of sharing by looking at what targets got out of the sharing. Targets could be asked about their experiences of receiving failure-knowledge and how such sharing affected/impacted them. Diwas et al. (2013) found that individuals learn from the failures of others vicariously. Following this logic, targets in the study could have been interviewed to find out if they had indeed learned from the sharer. What did the target learn from the sharer? If the sharer was sharing for the purpose of help-giving, then did the target benefit from that help? Or if the sharing was done with the intention of help-seeking, did the target learn vicariously through the sharer's failure?

As discussed, more could be explored and expanded on in our understanding and appreciation of failure sharing.

7.8 Practical implications

The findings of this study offer significant practical implications not only for human resources but also for working individuals and their organizations.

Firstly, the findings point to an awareness of failure sharing at work and outside of work. It is important for organizations to be aware of and try to address the challenges of sharing failure by providing specific organizational support. As seen in boxes A and B of Figure 15, the various motivators of failure sharing as reported by informants should encourage organizations to consider how they support employees in sharing their failures and learning from them. For example, when considering the informants in this study who shared their

failures as a way to help others, organizations could implement an official system that made this sharing reach a wider target so as to help others learn and benefit from failure sharing. In addition, organizations could reward those who shared their failures with others so as to encourage more of such sharing. Another example would be matching senior employees with junior teammates to foster networking within the organization, thereby increasing the network of targets for failure sharing. This suggestion grows out of informants' reports that they deemed targets as the right choice if they knew the targets had benefited from their sharing.

Failures are usually costly in terms of time, effort, money, and resources and to find solutions to failures create additional costs. If a solution is found but not shared with others, it would be wasteful. As for improving on the selection of targets for sharing failure (see box C in Figure 15), organizations could implement formal sharing/reporting systems to manage the knowledge that is gained from failures and their solutions. Such a "failure directory" would not only save time when employees are searching for solutions, but they would also be encouraged to share on the platform because it would not be seen as negative. It may be useful to also attach the name and/or project team's identity to these reports so as to help future solution seekers connect with colleagues to learn from them first-hand.

As the world is becoming connected via social media, much of what people consume on social media platforms emphasizes sharing successes. There has been a wave of people who wish to balance out the all-success image that social media paints. For example, the Museum of Failure had a four-month-long exhibition at Toronto's Harbourfront Centre (2018), showcasing failed innovations. The collection was originally conceived by innovation researcher Dr. Samuel West as part of his research on corporate success and innovation. Similarly, many forums have been organized to encourage more discussions of failure (e.g., Harvard Engineers

without Borders: Failure Forum). Therefore, in response to the findings in this study, I recommend that management in firms foster such forums where employees can share their failures, listen to other colleagues talk about their failures, and learn from these failures (see boxes D and E in Figure 15).

It is important to not keep failure to ourselves, but to shine a light on it with others and learn from it.

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Appendix A: Research informants

Number	Age	Gender	Tenure	Position
1	35	Female	12 yrs	Software Tester
2	38	Male	12 yrs	R&D Director
3	32	Male	7 yrs	Software Engineer
4	29	Female	5 yrs	Software Engineer
5	34	Female	8 yrs	Software Engineer
6	34	Female	8 yrs	Software Tester
7	30	Female	6 yrs	Software Engineer
8	35	Female	8 yrs	Software Engineer
9	39	Female	13 yrs	Software Engineer
10	30	Male	4 yrs	Software Manager
11	30	Male	1 yr	Software Manager
12	28	Male	3 yrs	Software Engineer
13	28	Male	2 yrs	Software Engineer
14	43	Male	15 yrs	Software Engineer
15	34	Female	6 yrs	Software Engineer
16	44	Male	10+ yrs	Software Developer
17	44	Male	17 years	Software Engineer Director
18	38	Male	8 yrs	Software Engineer
19	36	Male	6 yrs	Software Engineer
20	45	Male	10+ yrs	Software Developer
21	40	Male	2 yrs	Software Developer Director
22	24	Male	1 yr	Software Engineer
23	24	Male	a few mths	Software Engineer
24	24	Male	a few mths	Software Engineer
25	24	Male	a few mths	Software Engineer
26	24	Male	a few mths	Software Engineer
27	24	Male	a few mths	Software Engineer
28	34	Male	8 yrs	Software Engineer
29	38	Male	9 yrs	Software Engineer Director
30	38	Male	5 yrs	Software Engineer Leader
31	39	Male	8 yrs	Software Engineer
32	44	Male	8 yrs	Software Developer

Appendix B: Interview participation information sheet

Interview Participation Information

Introduction:

One of the challenges that individuals and management constantly encounter is employee's growth/development; and this challenge escalates when individuals experience difficulties in their daily work, such as failure. Despite the fact that failure can be costly for organizations and may stigmatize individual careers and organizations' reputation, failure can, however, be a valuable opportunity that allows individuals and organizations to learn from it to improve performance. Understanding the dynamics of failure would help employees and management to learn, grow, develop and conquer difficulties at work.

Research Objectives:

- (1) Why do individuals share their failure experiences at work?
- (2) What factors lead to sharing/not sharing a failure experience at work?
- (3) With whom would an individual be more (or less) likely to share a failure experience?

Management Implication:

Employees, management and organization would benefit from this research topic, 1) As failure is inevitable, recognizing the benefit of failure would help individuals learn and grow from it; 2) Programs, such as mentoring program, organizations could develop in order to convert failure into learning opportunities; 3) Team building – management would be better equipped with ways and methods to boost team morale by understanding failure sharing process.

Format of Interview: Face to face interview in English/Mandarin will be conducted

Date of Interview: To be Confirmed (Estimated time: End of June).

Location of Interview: Shanghai, China (Near Office)

Duration of Interview: 45 Mins – 60 Mins.

Compensation: 120 RMB/Per interview will be compensated to informants who complete the interview.

Researcher: Anita Boey & Chris Zhang

Supervisor: Dr. You-Ta Chuang

Confidentiality Disclosure/Privacy Protection:

This study adheres to the guidelines of the ethical review process of York University. The entire research information is highly confidential and informant's name would NOT be disclosed in any circumstances for privacy protection purpose.

Should you have any question, please feel free contact us:

Contact Info: Anita Boey - axboey@yorku.ca; Chris Zhang – chriszha@yorku.ca;
Dr. You-Ta Chuang - ychuang@yorku.ca;

We thank you for your collaboration in this research and we sincerely appreciate your support of academia. We firmly believe that your input would enhance our knowledge in organizational studies and help us better understand the world.

Looking forward to meeting you soon in Shanghai, China

Anita Boey
Chris Zhang
Dr. You-Ta Chuang
Toronto, Canada; May, 2016

Introduction of School of Human Resource Management (SHRM):

The School of Human Resource Management (SHRM) at York University is Canada's leader in HRM education. SHRM houses the single largest group of scholars of any Canadian university dedicated to the study of work, and all that it entails. Our cutting-edge research, undertaken within the range of methodological, ontological, and epistemological perspectives, addresses real-world problems and significant intellectual debates. Expertise of our faculty members ranges all areas of HRM specialization, including but not limited to: career management, compensation, critical management studies, labour and employment law, gender and diversity, global HRM, industrial relations, recruitment and selection, labour economics and statistics, strategic HRM, training and development, and work-nonwork issues.

Appendix C: Informed consent form (English)

Sample Informed Consent Form

Date: April 28, 2016

Study Name: Sharing Experiences of Failure at Work

Supervisor:

Professor You-Ta Chuang

Associate Professor- Administrative Studies & HRM

Office: 233 Atkinson

Email: ychuang@yorku.ca

Researcher:

Anita Boey

PhD Candidate, HRM

Office: 410 Atkinson

Email: axboey@yorku.ca

Purpose of the Research: The purpose of this research is to understand sharing experiences of failure at work.

What You Will Be asked to do in the Research: You will be asked to answer interview questions about your experiences of sharing failure at work. The interview will take approximately 1 hour.

Risks and Discomforts: We do not foresee any risks or discomfort from your participation in the research.

Benefits of the Research and Benefits to You: The results of this research will inform the business community how to manage failures and how to learn from failures. You will benefit from this research by having a good understanding of your motivation of knowledge sharing, and learning from failures at work. This will help you to deal with learning from failures in the future and also allow you to better adapt your sharing behaviors to that of the organizational culture.

Inducements: You will be offered CAD\$20 as a token of appreciation.

Voluntary Participation: Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of the ongoing relationship you may have with the researcher and the nature of your relationship with York University either now, or in the future.

Withdrawal from the Study: You can stop participating in the study at any time, for any reason, if you so decide. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with your employer, York University, or any other group associated with this project. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality: All information you supply during the research will be held in confidence and unless you specifically indicate your consent, your name will not appear in any report or publication of the research. Data will be collected from your involvement in the interview. Your interview will be electronically recorded and transcribed data will be electronically saved on a password protected laptop. All data output files will be password protected. The data will be stored for two years, at which point it will be deleted from all laptops. Confidentiality will be provided to the fullest extent possible by law.

Questions about the Research? If you have questions about the research in general or about your role in the study, please feel free to contact Anita Boey by e-mail (axboey@yorku.ca). This research has been reviewed and approved by the Human Informants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a informant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

Legal Rights and Signatures:

I (*fill in your name here*), consent to participate in (*insert study name here*) conducted by Anita Boey. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Signature

Informant

Date

Signature

Principal Investigator

Date

Appendix D: Informed consent form (Mandarin)

知情同意书

时间：

研究课题：工作场合中分享失败经验

研究人员：Anita Boey and You-Ta Chuang, 人力资源管理学院

研究目标：这个研究旨在了解工作环境中失败经验的分享

您将会在研究中做什么：在整个面试中，你将会被问到你工作中分享失败的一些经历。整个面试大约为一个小时左右。作为对您参与的感谢，一百二十元人民币会在面试结束后支付给您。面试地址将会选定在公司的会议室（得到公司的允许）或者临近您公司的咖啡馆。

风险和不安：我们没有预见到此研究会给您带来任何的风险和不安。然而，如果您在面试过程中感受到任何的不安或情绪压力，您可以在任何时间点终止次面试。

研究的益处以及对您的益处：研究的结果会通会商业社会，让我们更好的了解失败并且知晓如何从失败中获得学习。您将会从此研究中更好的获知您分享的动力以及如何从工作的失败中获得成长。此研究结果会帮助您更好的从将来的失败中获得学习并且帮助您更好的调整您的分享行为以便更好的适应组织文化。

自愿参与：您的参与是基于完全的自愿条件下，您可以随时终止参与此研究项目。如果决定不参与此研究项目，您和研究人员之间的关系以及和约克大学的关系不会有任何的影响，这种影响也包括未来的关系。

停止参与：您可以随时停止参与此研究项目，只要您愿意，任何的原因都可以。如果您决定停止参与，您将仍然会获得之前约定的感谢金。您中止参与的决定，或拒绝回答相关的问题，将不会影响到您和研究人员之间的关系，约克大学，或者相关的设计这个项目的团体。在您决定中止参与此项目的同时，所有相关的数据将会立即被销毁。

机密性：除非您明确表示同意，你研究的过程中提供的所有信息将严格保密。你的名字将不会出现在研究的任何报告或出版物。数据将在您参与的面试中收集。面试将以电子记录和转录的数据保存。所有的数据将会用电子密码保护到计算机上。所有的数据输出文件将是密码保护。该数据将会被保存两年，二年后它将从所有笔记本电脑中删除。保密性将受到最大程度上法律规定的保护。

关于研究项目有问题？如果您有任何的关于研究课题的问题或者您在研究项目中的角色，请随时联系 Anita Boey 通过电话 001-(416) 736-2100 分机 33672 和电子邮件(axboey@yorku.ca), 或者 You-Ta Chuang 电话 001-(416) 736-2100, 分机 66615 和电子邮箱(ychuang@yorku.ca). 此研究课题已经被约克大学伦理委员会，人类参与与委员会审阅并通过，并且符合加拿大涉及人类研究之伦理指导。如果您对这个过程，或者关于这个项目参与者的权利有任何的问题，请您联系研究伦理办公室资深经理和政策指导 五楼, Kaneff Tower, 约克大学 (电话 001- 416-736-5914 或者邮箱 ore@yorku.ca).

法律权利和签名：

我_____同意参与由 Anita Boey 实施的“工作中分享失败经验”的研究课题”。我已经了解此研究项目的性质并且愿意参与。我签署此表格不放弃我的任何法律权利。以下的签名表达我的同意参与此项目。

签名：_____
(参与者)

时间：_____

签名：_____
(主要研究人员)

时间：_____

Appendix E: Interview guide (English)

Can you tell me a bit about your job? What you do?			
Based on your experience at work, how would you define success? What constitutes 'success' in the kind of work you do? How do you define success? Vs. How does your employer define success?			
Can you give me some examples of where you have succeeded? Based on whose definition of success is this? Yours or your employer? Did you share those successes with anyone else? Who did you share with? Why did you share with this person/these people?			
Thanks for that, so now let's think about 'failure' – what would you say constitutes 'failure' in your job?			
Have you had any failures say in the last three months? (get a sense of the frequency of failure, and also failure sharing)			
Did you share these experiences of failures with anybody?			
Yes		No	
Why did you share these failure experiences? (Was it because you wanted to learn from the failures? Or to impress others? Had you thought about how others would look at you before you shared? Self-protection purposes? Or Had you thought about what would happen after you shared? What is your attitude/approach towards sharing failures?) Have you shared your failures to help the other person? Help them in what way?		Why didn't you share these failure experiences with anyone?	
Who did you share these failure experiences with? What was the condition of the sharing? Coffee break? What was the medium of sharing? Oral, written? Do you think about privacy issues?		Do you think other people share failure experiences at work?	
Did you share your failure experiences with anybody else? (i.e. more than 1 person)		If yes, ask about their perception of others' experience of sharing.	
Yes: - (So you shared with more than 1 person?)	No: - (So you only shared with one person?)	If no, ask 'why is that?'	
Why did you share with these people? Among those people, did you share more with one particular person? If yes, then why?	Why didn't you share with anyone else?	Redirect interview back to success experience: Let's talk about your experiences of success again.	
Were they directly affected by your failures?	Why did you share with this person? What was your relationship with this person? At the time of sharing, did you consider this person your friend?	Tell me about your success sharing experiences. (Why did you share with this person? Did you consider this person your friend? Did you trust this person? Does this person have similar success experiences as you? Does this person share his/her success experiences with others? Do you think other co-workers share their success experience with this person? Did you feel safe sharing with this person?)	
Were these people your co-workers?	Was this person your co-worker?	How did you feel after sharing?	
Yes.	No.	If yes, were you in the same work team?	What would you do differently in the future?
Were you in the same team at work? At the time of sharing, did you consider these people your friends?	What was your relationship with these people? At the time of sharing, did you consider these people your friends? Why did you share with these people outside of work? What made you share with these people instead of your co-workers?	Was this person directly affected by your failures?	Would you share again?

<p>Did you trust those people? Have these people had similar failure experiences as you? Did these people have similar work knowledge as you? Have these people shared their failures with others at work? Do you think other co-workers shared their failure experiences with these people? Do other people share with each other also? Did you feel safe sharing with these people?</p>	<p>Did you trust those people? Have these people had similar failure experiences as you? Did these people have similar work knowledge as you? Have these people shared their failures with others at work? Do you think other co-workers have shared their failure experiences with these people? Did you feel safe sharing with these people?</p>	<p>Did you trust this person? Has this person had similar failure experiences as you? Did this person share his/her failures with others at work? Do you think other co-workers share their failure experiences with this person? Did you feel safe sharing with this person?</p>	<p>Would you share with the same person again?</p>
<p>Did you share your failure experiences differently with each of these people?</p>	<p>Did you share your failure experiences differently with each of these people?</p>	<p>Did you give thought to how you would share your failure experiences? How did you share your failure experiences?</p>	<p>Is there anything else you would like to tell me?</p>
<p>Did you give thought to how you would share your failure experiences? How did you share your failure experiences?</p>	<p>Did you give thought to how you would share your failure experiences? How did you share your failure experiences?</p>	<p>How did you feel after sharing with this person?</p>	<p>-----</p>
<p>How did you feel after sharing?</p>	<p>How did you feel after sharing?</p>	<p>What would you do differently in the future?</p>	<p>-----</p>
<p>What would you do differently in the future?</p>	<p>What would you do differently in the future?</p>	<p>Would you share again?</p>	<p>-----</p>
<p>Would you share with these people again?</p>	<p>Would you share with these people again?</p>	<p>Have you shared success experiences with this person?</p>	<p>-----</p>
<p>Have you shared success experiences with these people?</p>	<p>Have you shared success experiences with these people?</p>	<p>(If yes) How was the sharing experience different from sharing failures?</p>	<p>-----</p>
<p>(If yes) How was the sharing experience different from sharing failures?</p>	<p>(If yes) How was the sharing experience different from sharing failures?</p>	<p>Is there anything else you would like to tell me?</p>	<p>-----</p>
<p>Is there anything else you would like to tell me? Were there instances of not sharing? Why didn't you share those things? Failure that you didn't share? Is there something different about those failures that you don't share? Magnitude of failure?</p>	<p>Is there anything else you would like to tell me?</p>	<p>-----</p>	<p>-----</p>

Appendix F: Interview guide (Mandarin)

Interview Question in English	Chinese	Pronunciation
Please tell me about your job.	请你说说你工作的范围.	Qǐng nǐ shou shou nǐ gong zhou de fan wei.
Based on your experience at work, how would you define success?	根据您的工作经验, 什么才算成功?	Gēnjù nín de gōngzuò jīng yen, se mo cai shuan chénggōng?
Can you give me some examples of where you have succeeded?	你能举些例子吗?	Nǐ nen gui xie li zi ma?
Did you share with anyone?	你有没有和任何人分享?	Nǐ yǒu méiyǒu hé rén her ren fēnxiǎng?
Who did you share with? Why did you share with this person/these people?	你和谁一起分享? 你为什么要和这个人/这些人分享?	Nǐ hé shuí yīqǐ fēnxiǎng? Nǐ wèishéme yào hé zhège rén/zhèxiē rén fēnxiǎng?
Thanks for that, so now let's think about 'failure' – what would you say constitutes 'failure' in your job?	谢谢了, 现在让我们想想“失败” - 你会如何定义“失败”?	Xièxièle, xiànzài ràng wǒmen xiǎng xiǎng “shībài” - nǐ huì rúhé dìngyì “shībài”?
Have you had any failures say in the last three months?	你在过去 3 个月有没有失败的经历?	Nǐ zài guòqù 3 gè yuè yǒu méiyǒu shibai de jīnglǐ?
Did you share these experiences of failures with anybody?	你有没有和其他人分享?	Nǐ yǒu méiyǒu hé qí ta ren fēnxiǎng?
Yes.		
Why did you share these failure experiences?	为什么你分享这些经验?	Wèishéme nǐ fēnxiǎng zhèxiē jīngyàn?
Who did you share with?	你和谁分享这些经验?	Nǐ hé shuí fēnxiǎng zhèxiē jīngyàn?
Did you share with anyone else?	你有没有和其他人分享你的失败经验?	Nǐ yǒu méiyǒu her rènhe rén fēnxiǎng nǐ de shībài jīngyàn?
Why did you share with these people?	你为什么要和这些人分享?	Nǐ wèishéme yào hé zhèxiē rén fēnxiǎng?
Among those people, did you share more with one particular person? If yes, then why?	这些人当中, 你跟谁分享的比较 多? 为什么?	Zhe xie ren dang zhong, ni gen shui fen xiang de bi jiao duo? wèishéme?
Were they directly affected by your failures?	你失败的经验有没有直接影响到 他们?	Ni si bai de jing yan you mei you zhi zie ying xing dao ta men?
Were these people your colleagues?	这些人是不是你的同事?	Zhe xie ren si bu si ni de tong si?
Were you in the same team at work?	这些人是不是你团队的成员?	Zhe xie ren si bu si ni tun dui de chen yuan?
At the time of sharing, did you consider these people your friends?	这些人是不是你的朋友?	Zhe xie ren si bu si ni de pen you?
Did you trust those people?	你信任这些人吗?	Ni xing ren zhe xie ren ma?
Have these people had similar failure experiences as you?	你们经历过的失败一样吗?	Ni men jing li guo de si bai yi yang ma?
Did these people have similar work knowledge as you?	这些人有类似的工作知识吗?	Zhèxiē rén yǒu lèisì de gōngzuò zhīshì ma?

Have these people shared their failures with others at work?	这些人有没有和其他人分享他们的失败经验?	Zhe xie ren you mei you her qi ta ren fen xiang si bai jing yen?
Do you think other co-workers shared their failure experiences with these people?	你觉得其他同事会和这些人 分享自己的失败经验吗?	Ni juai der qi ta tong si hui her zhe xie ren fen xiang zhi zi de si bai jing yen ma?
Did you feel safe sharing with these people?	分享时有没有觉得安全?	Fen xiang si you mei you juai de an quan?
Did you share your failure experiences differently with each of these people?	您是否与这些人以不同的方式分享您的失败经验?	Nín shìfǒu yǔ zhèxiē rén yǐ bùtóng de fāngshì fēnxiǎng nín de shībài jīngyàn?
Did you give thought to how you would share your failure experiences?	你有没有想过应该怎样分享你的失败经验?	Ni you mei you xian guo ing gai zhem yang fen xian ni de shi bai jin yan?
How did you share your failure experiences?	您是如何分享你的失败经验?	Nín shì rúhé fēnxiǎng nǐ de shībài jīng yan?
How did you feel after sharing?	分享过后有什么感想?	Fen xian guo hou you sen mou gan xiang?
What would you do differently in the future?	将来你的分享方式会一样吗?	Jiang lai ni de fen xiang fan si huai yi yang ma?
Would you share with these people again?	你会再次和这些人分享吗?	Ni hui zhai ci her zhe xie ren fen xiang ma?
Have you shared success experiences with these people?	你有和这些人分享你的成功吗?	Ni you her zhe xie ren fen xiang ni de chen gong ma?
How was the sharing experience different from sharing failures?	分享成功与失败有何不同呢?	Fen xiang chen gong yi si bai you her bu tong ner?
Is there anything else you would like to tell me?	你还有什么东西要跟我分享吗?	Ni hai you sen mou don c yao gen wo fen xiang ma?
No.		
What was your relationship with these people?	你和这些人是什么关系?	Ni her zhe xie ren sis en mou guan xi?
Why did you share with people outside of work?	你为什么跟同事分享 却 跟这些人分享呢?	Ni wei sen mou bu gen dong si fen siang, qui gen zhe xie ren fen xian ner?
No, No.		
Why didn't you share with anyone else?	为什么没有和其他人分享呢?	Wei sen mou mei you her qi ta ren fen siang ner?
Why did you share with this person?	为什么和他分享?	Wei sen mou her ta fen siang?
Was this person your co-worker?	他是不是你的同事?	Ta sib u si ni de tong si?
No, No, No.		
Why didn't you share these failure experiences with anyone?	你为什么不要和其他人分享?	Ni wei sen mou bu yao her qi ta ren fen xiang ner?
Do you think other people share failure experiences at work?	你认为其他同事会分享他们的失败经验吗?	Ni ren wei qi ta tong si hui fen xiang ta men de si bai jin yan ma?