

## Original Paper

# Time-Stage Model of Failure

Cheng Pang<sup>1</sup>

<sup>1</sup> Institute of Analytical Psychology, City University of Macau, China

Received: July 25, 2023

Accepted: August 11, 2023

Online Published: August 16, 2023

doi:10.22158/jetss.v5n3p176

URL: <http://dx.doi.org/10.22158/jetss.v5n3p176>

### **Abstract**

*In the past few decades, failure has attracted more attention as people realize that experiencing and learning from failure is an essential part of achieving success. In light of this, I propose a time-stage model of failure, which describes and predicts the processes and responses at three stages of failure: In the first stage, individuals experience immediate emotional pain and a sense of threat to their fundamental needs upon detecting failure; in the second stage, individuals reflect on the significance of their failure and develop different motives to recover from the threatened needs. In the third stage, prolonged exposure to failure drains individuals' resources and leads them to believe that they are destined for continuous failure. This can result in compliance, avoidance, and a decrease in self-efficacy. Finally, we call for more research to explore the factors and psychological mechanisms that affect the individuals' response to failure, so that more strategies can be developed to help individuals recover from short-term failures and minimize the negative consequences of long-term failure.*

### **Keywords**

*Failure, Temporal model, Psychological pain, Fundamental needs, Motivations*

### **1. Introduction**

Failure—the individual fails to achieve their expected goals—seems to happen frequently in our daily lives. However, for a long time, people tend to pay more attention to the joy and achievements brought by success than to failure, which leads to the lack of relevant theoretical and systematic research on failure. Until more and more literatures emphasized the importance of failure to success (Harford, 2011; Petroski, 2006; Tahirsylaj, 2012), people gradually realize that failure is a prerequisite for success, and we often learn more from failure than from success. However, these articles pay more attention to how people recover and learn from failure to achieve success rather than failure itself.

Even though people often emphasize the importance of success in teaching, failure itself is well worth studying, as it also profoundly affects individuals' emotional state, goals and their social relations

(Lewin, 1936). Specifically, individuals who suffer from failure report more negative emotions (Cozzarelli & Major, 1990; Shepherd & Cardon, 2009; Shepherd et al., 2011; Thompson et al., 1998) and threatened fundamental needs, such as self-esteem (Crocker et al., 2006; Zeigler-Hil et al., 2011; Thompson et al., 1998), sense of belonging (Baumeister & Leary, 1995; DeWall et al., 2009) and sense of control (Thompson et al., 1998). These individuals have different motivations and behaviors to address the negative event: Some of them try harder to get close to the goal and tend to become more frustrated and brave, while others may choose to adjust their goals or generate avoidance motives to avoid further failure. Eventually, if individuals are exposed to failure for a long time, they will feel the exhaustion of their own resources and react similarly like individuals with low self-efficacy.

In a word, failure, as a common negative event that affects people's mental health, deserves more attention in terms of its impact on individuals' emotions and cognition. Meanwhile, it is essential to explore how personality and cognition influence individuals' responses to failure. However, the current studies pay little attention to failure itself, and they lack of certain theoretical guidance, which lead to the absence of systematic studies in this field. Therefore, this study drawing inspiration from the Temporal Need-Threat Model of Ostracism (Williams, 2009) and proposes a Time-Stage Model of Failure, which offers theoretical support for understanding individuals' motivations and reactions in failure situations. Furthermore, this study calls for more empirical research to enrich this theoretical model and guide individuals in coping with failure effectively.

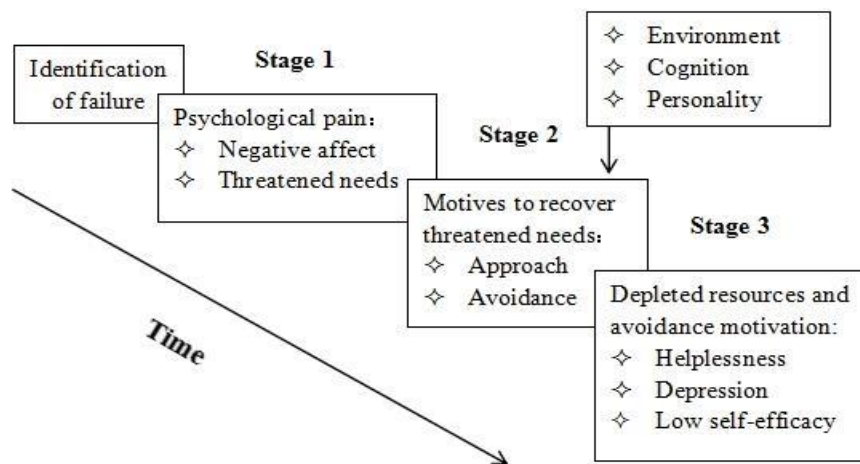
## **2. Construction and Interpretation of the Model**

This section provides a review of the relevant literature and constructs a comprehensive Time-Stage Model of Failure. Firstly, it elucidates the process by which individuals identify failures, as well as the impact of failure on fundamental needs such as emotions, self-esteem, sense of control, and sense of belonging. Lastly, it further explains the potential motives and coping strategies that individuals may exhibit at different stages following failure.

### *2.1 Identification of Failure*

From the description of the Time-Stage Model of Failure in Figure 1, it can be observed that the first step in the process of failure impact is the individual's identification of failure. In fact, individuals do not directly associate objective achievements with the feeling of success or failure, as the same achievement can lead to a sense of great success or complete failure (Lewin, 1936). For example, a student who usually achieves straight A's but receives a B in this turn may consider it as a failure, while another student who usually gets C's and also receives a B may consider it as a success. Lewin (1936) pointed out that this difference not only applies to different individuals but also to the same person. For instance, it is commonplace for a person to be able to lift a weight of twenty kilograms when they are young, but it would be a significant success for them if they can still lift a weight of twenty kilograms at the age of eighty; alternatively, if persons who can lift a weight of twenty kilograms previously but still lift a weight of twenty kilograms at most after vigorous training, this outcome would be considered

as a failure for them. Therefore, whether an individual experiences failure does not depend on the achievement itself, but rather on the relationship between the achievement and the person's expectations. Additionally, not all individuals have expectations for a particular achievement. For example, sprinters may not care about their performance in a swimming competition, even if they finish last. In the above description, there are two necessary conditions for identifying the failure: one is that the individual has the desire to achieve this particular accomplishment, and the other is the realistic outcome that the individual cannot achieve this achievement.



**Figure 1. Time-Stage Model of Failure**

Even though the criteria for identifying failure may sound strict, individuals are still sensitive and quick at detecting and identifying failure. Researchers have conducted studies where students were asked to list their expected scores before final exams, and those who did not achieve their target scores were identified as failures (Cozzarelli & Major, 1990), then found that these students reported significantly lower levels of satisfaction compared to the individuals in successful group. Other researchers also found that when individuals were set with high and unattainable game score goals, they recognized the experience as a failure and reacted to it quickly, even though the perceived degree of failure may vary among individuals (Spinath & Stiensmeier-Pelster, 2003). Furthermore, failure induction paradigms include manipulation methods that allow individuals to define failure based on their own past achievement standards. For example, Thompson et al. (1998) employed the hypothetical achievement outcome method to induce a failure scenario, requiring participants to vividly imagine themselves performing poorly in an important final exam, far below their previous achievements. Participants immediately showed high levels of anxiety and low levels of satisfaction after experiencing manipulated underperformance, indicating that individuals can detect and identify failure sensitively and quickly.

There is a recall induction method commonly used in the study of ostracism, which has also been

proved by Pickett et al. (2004) as an effective manipulation to induce failure experience. In their study, participants were asked to recall and write down their experiences of serious academic failure to induce the feeling of failure. The results demonstrated that the consequences of failure were highly similar to those of exclusion. Individuals who assigned to the exclusion and failure groups displayed more negative views and similar negative emotional reactions compared to the neutral control group. Numerous studies have shown that the detection of exclusion is both sensitive and quick (Williams & Jarvis, 2006; Williams, 2009), and failure exhibits similar characteristics. From an evolutionary perspective, individuals may need to identify such negative events rapidly and reflect upon their behavior to recover and grow from these experiences as quickly as possible, making it an adaptive behavior.

### *2.2 Psychological Pain Cause by Failure*

Viewed from the perspectives of human evolution and adaptation, individuals need clear signals, such as psychological pain, in order to react promptly to failure and recover from it.

Emotional deterioration is the immediate manifestation affected by psychological pain. Many studies have often employed self-report measures to assess the worsening of emotions. Individuals who have experienced failure report higher levels of negative emotions, such as dissatisfaction, depression, unhappiness, displeasure, and anxiety, compared to control groups (Cozzarelli & Major, 1990; Cunningham, 2004; Dillon, 1998; Thompson et al., 1998). Additionally, other painful reactions have been observed, such as despair, panic behavior, blame and anger, disorganization, and detachment (Shepherd et al., 2011). Even though the paradigms for inducing failure in these studies may vary, participants report intense distress consistently, which suggesting that the individual's alert system for coping with failure is minimally influenced by situational factors or individual differences. It is precisely these psychological pain signals that attract the attention of the failures, enabling them to take appropriate actions as quickly as possible to this threatening event.

However, the consequences of this psychological pain are not just deteriorating emotions, otherwise individuals' responses to failure should be singular, such as refusing to attempt again in order to avoid failure, rather than exhibiting a variety of different reactions as are actually observed. Therefore, the deep signals of psychological pain in my proposed model also include individuals' threatened needs, such as the need for a sense of control (Bandura, 1993; Dweck, 1975; Skinner, 1998), the need for a sense of belonging (Baumeister & Leary, 1995; DeWall et al., 2009), the need for meaningful existence (Brown, 2010; Brown & Dutton, 1995), and the need for self-esteem (Crocker et al., 2006; Zeigler-Hill et al., 2011; Thompson et al., 1998).

Specifically, failure - the inability to reach expected goals - weakens individuals' belief in their own abilities and their sense of control over the surrounding environment. Some individuals tend to attribute failure to their own incompetent (Thompson et al., 1998), which not only triggers anxiety but also generates a sense of being unable to control things and cope with challenges. Some significant failures even leave individuals feeling out of control over their destiny, making it difficult to predict their future

achievements and satisfy their own needs, thereby significantly threatening their sense of control.

Failure often weakens a person's social standing and sense of worth. When individuals experience failure, they may feel unappreciated or disrespected by others, which not only threatens their sense of control but also their sense of belonging. This threat to belonging is particularly evident when individuals are part of a group. For example, if an individual joins a club composed of high-achieving students, a failed exam may make them worry about no longer being accepted or recognized by others, thus diminishing their sense of belonging within this group. When everyone in a team achieves success while one experiences failure, the individual may perceive a sense of exclusion, making it difficult to establish meaningful connections and identification with others. Furthermore, they may question whether the values and goals of this collective or environment align with their own, which further weakens their sense of belonging to the group.

Similarly, failure hinders individuals from pursuing meaningful goals and values, potentially making it difficult for them to have a positive impact and sense of worth in society and life. According to Rosenberg (1985), individuals' perception of their own value is closely related to their sense of existence and psychological well-being. On the one hand, failure can influence one's self-concept and self-evaluation, thereby impacting their sense of existence and well-being. On the other hand, failure threatens a sense of meaningful existence by affecting individuals' connections and identification with others. Similar to exclusion, failure may hinder individuals from finding the corresponding status and sense of identification within the collective and society, thereby posing a threat to their sense of meaningful existence.

At the same time, failure can also threaten self-esteem, which mainly stems from the concept that associates success with values and honor. On the other hand, this perspective also links the feeling of failure with shame because failure often implies personal inadequacy or inferiority to others. This sense of incompetence often leads to embarrassment and shame, thus undermining self-esteem. Sometimes, failure may even be criticized or blamed by teachers or parents, which further intensifies the threat to self-esteem. Empirical studies have also found that the experience of failure may have a negative impact on individuals' self-esteem (Neff et al., 2007). Individuals who experience failure report significantly lower levels of self-esteem compared to those who have achieved success (Thompson et al., 1998).

Furthermore, according to Maslow's hierarchy of needs theory, humans have a need for self-actualization, which includes the pursuit of self-recognition, personal achievements, personal values, and goals in order to maximize individual development and personal worth. Failure hinders the realization of personal achievements (Covington, 1992) and causes harm to personal worth, goals, and self-recognition, thus threatening the need for self-actualization. Leary and Baumeister's theory (2000) suggests that if the experience of failure undermines self-esteem, it may also threaten an individual's self-actualization value.

In a word, failure in the first stage is primarily about detecting and identifying failure, then accepting

the psychological pain signals that it brings. These signals involve not only emotions but also deeper-level threats to fundamental needs.

### *2.3 Motives to Recover from Psychological Pain*

In Hoppe's experiment, failure led to a decrease in ambition for 50% of participants, 21% chose to maintain their original goals unchanged, while 2% comforted themselves by recognizing previous successful experiences and 27% completely stopped engaging in the activity (Lewin, 1936). Here, we can observe and summarize that failure resulted in two main types of motivation and behavior, namely approach or avoidance. Few individuals exhibited avoidance motivation immediately after a brief experience of failure, while most still held a desire and willingness to attempt achieving their goals. However, failure made individuals more cautious, leading them to choose a more suitable goal based on their abilities and environment.

Why do some individuals continue to exhibit a tendency towards approach motivation and behavior, while others display avoidance motivation after failure? According to the need reinforcement hypothesis, after individuals detect failure, experience negative emotions, and perceive the psychological pain brought by threatened needs, they enter a stage of re-evaluation. In this stage, they adopt different motivations and behaviors to restore the needs that are significantly threatened to an optimal level (Williams, 2009). According to the need reinforcement hypothesis, after individuals recognize failure, experience negative emotions, and perceive the psychological pain brought by threatened needs, they enter a stage of re-evaluation. In this stage, they adopt different motivations and behaviors to restore the needs that are significantly threatened to an optimal level (Williams, 2009). Lewin (1936) suggests this kind of abandonment after success usually occurs when it follows a series of failures. Individuals with a strong need for high self-esteem do not like the feeling of quitting after failure, so they continue to try until they find a successful opportunity and then immediately stop to prevent the possibility of new failures. Similarly, if failure poses the greatest threat to an individual's sense of belonging, meaningful existence, and self-actualization needs, individuals will continue to try and exhibit motivation towards approaching goals in order to obtain acceptance from the group or fulfill their own values to satisfy the threatened fundamental needs. However, if failure poses the greatest threat to an individual's sense of control, where they are unable to satisfy the strong need to control their lives and environment, they may tend towards avoidance behavior in order to avoid the anxiety and discomfort brought by this lack of control. Research has shown that this anxiety makes individuals more inclined to avoid risks (Lerner et al., 2015). Individuals with a high need for control may prefer stable and predictable situations, thus preferring avoidance motivations to decrease the risk of failure, because even the readjusted new goals are at risk of being unattainable.

In addition, differences in environmental, cognitive, and personality factors also play an important role in the recovery speed of psychological pain and the individual's choice of behavior to deal with threatened needs (Williams, 2009). In a longitudinal study by Lin and Ensel (1984), adult residents of a certain area in the United States were measured concerning their perceived support from intimate

partners and close friends. Path analysis was conducted to analyze the relationship between their scores on perceived support in intimate relationships and scores on depression symptoms over a one-year period, revealing that a decrease in perceived social support was associated with an increase in depression. A cross-sectional study by Billings and Moos (1984) also confirmed the negative correlation between social support and distress. This suggests that providing a more supportive and inclusive environment may facilitate quicker recovery from psychological pain and stress after failure. A longitudinal analysis of three years of data collected from middle school education in Korea in 2005, led by Song et al. (2015), found that emotional support from parents and peers could predict lower levels of test anxiety, and buffering the negative effects of maladaptive motivation, resulting in a lower likelihood of adopting avoidance behaviors. This indicates that a more supportive environment can help individuals enhance their confidence to overcome obstacles and difficulties, possibly leading to approach motivation for achievement rather than avoidance motivation.

Excepted to environmental factors, an individual's cognitive style also influences their recovery from failure and the motivations they take in response. Thompson et al. (1998) found that individuals who tend to attribute failure to their own ability while attributing success to luck or effort, displaying higher levels of anxiety and lower levels of self-esteem after failure, thus making it more difficult for them to recover from failure. They always fear failure more (Chapman, 2017), therefore, they may be more prone to avoidance motivation. Conversely, if a person is accustomed to attributing failure to external factors or effort, believing that failure is not due to their inability to achieve, they may display a stronger motivation for achievement and make more attempts to reach their goals. Similarly, Dweck (2006) proposed that those who believe in the malleability and growth of ability perceive failure as an opportunity for learning and improving their skills, therefore, they are better able to recover from failure and cope with challenges. On the other hand, those who believe in fixed ability find it more difficult to recover from failure and are more likely to doubt their own abilities, which leading to a tendency to give up challenges. Thus, the cognitive and evaluative differences towards failure can lead to different recovery speeds and behavioral responses.

Furthermore, individual personality differences also have influence on the ways individuals recover from failure and the types of behaviors they engage in. Individuals who lack of perseverance tend to develop avoidance motivation and choose to give up trying after experiencing failure, whereas resilient individuals persist in maintaining their level of ambition and continuously strive towards their goals despite setbacks. For instance, Duckworth et al. (2007) found that grittier individuals tend to achieve higher levels of academic and educational success, and grit predicts early retention rates among West Point cadets. This suggests that individuals with higher levels of perseverance are better able to maintain their goals when faced with difficulties and recover from failure, so that they can continue pursuing their objectives rather than avoiding them. Similarly, individuals with higher levels of psychological resilience have greater ability to bounce back from adversity (Fletcher & Sarka, 2013). They are able to maintain a positive attitude even in the failure, making it easier for them to recover

from the pain of failure, while individuals with lower psychological resilience may be more prone to experiencing distress and developing avoidance motivation towards their goals in the failure. Another personal trait that may impact individual responses to failure is optimism. Carver (1985) suggests that optimists actively strive to achieve their goals and have positive expectations even when facing obstacles. Optimists tend to explain negative events using external, unstable, and specific reasons (Buchanan & Seligman, 1995). As a result, they are more likely to believe in their ability to overcome obstacles, thus stimulating persistence towards goal pursuit (Brown & Massalal, 2001) rather than giving up easily. Moreover, optimism can alleviate the negative effects of avoidance motivation (Icekson et al., 2014), and individuals with higher levels of optimism have better psychological and physiological adaptation to stressors (Carver et al., 2010). This implies that optimists can recover better from the pain of failure and engage in more proactive coping strategies.

In summary, individuals adopt different motivations and behaviors in the second stage to restore the most threatened needs to optimal levels after failure. Additionally, various factors such as the environment, cognition, and individual personality contribute to different effects during this stage.

#### *2.4 Long-term Failure Leads to Avoidance Motivation*

If individuals experience repeated failures, they will feel a depletion of their own energy and develop a sense of learned helplessness. Seligman and Maier (1967) conducted a series of electric shock experiments with animals and found that dogs, which were unable to control and escape the shocks after multiple attempts, displayed a clear sense of helplessness and gave up trying, even when they had the opportunity to avoid the shocks later on. This result, not only confirmed in dogs, but also observed in cats (Masserman, 1971), fish (Padilla, 1973), rats (Seligman & Beagley, 1975), and even humans (Hiroto, 1974; Rodin, 1976). For instance, Hiroto (1974) randomly assigned participants to a controllable noise group, an uncontrollable noise group, or a no noise group. They were then presented with a button to control the noise. The results showed that participants in the controllable noise group and the no noise group were able to successfully eliminate the interference of the noise, while those in the uncontrollable noise group exhibited avoidance behavior and disregarded the button, choosing to continue listening to the noise. This indicates that repeated failures create a perception of uncontrollability, which make individuals feel helpless regardless of how many resources and efforts they invest, thus intensifying their future avoidance motivation. Additionally, this sense of helplessness contributes to the development of depression, as well as the cognitive and emotional components, posing a long-lasting threat to one's mental health (Abramson et al., 1978).

Furthermore, long-term failures decrease individual's self-efficacy, resulting in more avoidance motivation. Bandura (1997) defined self-efficacy as the belief in one's capability to achieve success and positive outcomes. Failure can undermine this belief. In a study conducted by Hardy III (2014), participants were randomly assigned to either a failure group or a control group. The difficulty of the computer game played by the failure group progressively increased, while the difficulty for the control group remained at a moderate level. The results showed that participants in the failure group had



significantly lower self-efficacy compared to those in the control group. If individuals continue to experience failure in the long term, it can be predicted that their self-efficacy will continue to decrease until the cycle of failure is broken.

In summary, individuals gradually deplete their own resources after multiple attempts. If they are unable to escape the cycle of failure and remain in it for a prolonged period, they tend to avoid rather than try again because they have exhausted their energy. The complete time-stage model of failure can be seen in Figure 1.

### 3. Discussion

The phenomenon of failure is common in people's lives and growth processes, whether in academic or work settings, and we all face many risks of failure. However, previous research lacks comprehensive theories related to failure, and there is no unified theory that integrates the psychological changes and behavioral motivations when individuals experience failure. This has also made it difficult for researchers to systematically explore the impact of failure on individuals. The current research proposes a time-stage model of failure that provides clues for systematic exploration of strategies for coping with failure and recovering from it. The study found that although individuals suffer varying degrees of emotional and fundamental needs damage when coping with failure, they still possess the approach motivation to restore their threatened basic needs until they experience long-term failure, which then leads to more irreversible damage and avoidance motivation. This finding highlights the need to pay more attention to the negative impact of long-term failure and provide effective help to individuals before they reach that point. Especially, educators should carefully encourage students to learn and grow from failure, make sure help them to avoid negative outcomes of frustration education.

In addition, the study also suggests that the environment, cognition, and individual personality can influence individuals' behaviors and reactions after failure. Specifically, a supportive environment can help individuals recover from failure more quickly, attribution style differences can affect individuals' motivation to strive for achievement, and individual personality traits (such as perseverance and optimism) can also assist individuals in better coping with failure. Therefore, as educators or parents, it is important to provide a more supportive environment for children to allow them to make mistakes. When students fail, it is essential to guide them to attribute failure to effort rather than ability and encourage them to strive for their goals again. At the same time, cultivating optimistic and resilient personalities in children is crucial as it helps them overcome failure rather than being defeated.

However, it is worth noting that the current research is limited to the theoretical level, and it still need more empirical research to verify and enrich the theory, so that to get more concrete and effective strategies. Future research can design more cross-sectional experiments or longitudinal studies to explore the multidimensional impact of failure on individuals and attempt to discover more factors and psychological mechanisms that influence individuals' recovery from failure. In this way, we can assist humankind in better coping with failure and setbacks.

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