



RESEARCH ARTICLE

Failure as an Obstacle or a Support: The Failure Beliefs Scale Development Study

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ARTICLE HISTORY

Received: 14.08.2023

Accepted: 19.09.2023

KEYWORDS

Failure Beliefs, Implicit Theory, Scale Development.

ABSTRACT

This scale development study aims to measure the failure beliefs of adults in Turkish culture by exploring failure concept through Carol Dweck's implicit theories. In the study, the stages of the scale development process were followed with a mixed method approach. Firstly, qualitative data was gathered through literature review and focus groups. Subsequently, exploratory analysis and confirmatory analyses was performed on quantitative data gained from totally 887 adults. The findings revealed that Failure Beliefs Scale was generated with eight items in two factors: one factor assesses the belief that failure is debilitating, while the other evaluates the belief that failure is enhancing. The gender-based measurement invariance was assessed, and its reliability was verified through the calculation of internal consistency and stability coefficients. Scale showed appropriate validity and reliability for evaluating adults' failure beliefs. The use of the scale in studies related to failure in different fields such as education and work will contribute to future studies in Türkiye.

Is failure an obstacle or support? It can be said that studies on failure in the motivation literature for many years have centered around this question. Since the early studies, failure has been intensively addressed within the concepts of failure avoidance and fear of failure (Elliot & Covington, 2001). As a matter of fact, Martin and Marsh (2003) posed a similar question for fear of failure and stated that the answer to this question differs among individuals based on the need for success approach. In this context, while fear of failure is positive for some individuals and leads them to succeed in the face of difficulties, for others it can be negative, and cause learned helplessness and high anxiety (Martin, 2002).

Differences in individuals' motivation to avoid failure have been tried to be explained in many different conceptual frameworks such as implicit motives (Atkinson, 1957; McClelland, 1965), temperament (Elliot & Trash, 2002), causal attributions (Weiner, 1972) and orientations (Conroy & Elliot, 2004). One of the approaches to explain this situation was developed by Carol Dweck. Dweck, who first associated the motivation to avoid failure with goal orientations and then with implicit beliefs, explained the fear of failure with meaning-making systems involving individuals' beliefs (Hong et al., 1999).

In their first studies on learned helplessness, Dweck and his colleagues revealed that some individuals are willing to take risks and take on difficult tasks and are resilient against failures and difficulties, while others avoid especially difficult tasks and give up after these situations by feeling excessive anxiety against failure situations (Elliott & Dweck, 1988). Dweck argued that these different reactions and behaviors that individuals

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show in the face of failure are related to implicit beliefs. In this context, individuals' beliefs serve as a cognitive lens for them and affect their perception of failure situations and indirectly their coping behaviors in these situations (Dweck, 2006; Dweck & Molden, 2006).

Haimovitz and Dweck (2016) basically defined two related but also different failure beliefs: beliefs that failure is debilitating and beliefs that failure is enhancing. As a matter of fact, these two different beliefs about failure are similar to the beliefs of different researchers in the literature that failure is a threat or a challenge (Berger & Freud, 2012; Crocker et al., 2006; Nishimura et al., 2017).

Believing that failure is positive sees failure as a source of improvement in various areas like performance, achievement and productivity. This positive side of failure beliefs includes the positive evaluation of the effects of failure and the idea that one should benefit from failed experiences. In addition, individuals who adopt this belief intensely think that failures also increase performance and productivity and contribute to learning and development. On the other hand, beliefs that failure is debilitating view failure as a threat with negative consequences and one should try her/his best to avoid it (Haimovitz & Dweck, 2016). As a result, seeing failure as a learning opportunity means defining it as a chance for development and learning, while accepting failure as a negative experience includes beliefs that it causes feelings such as shame and disappointment (Ikeda & Misawa, 2012).

Failure beliefs are seen as an important determinant of individuals' motivation for success and failure, especially in the field of education (Robins & Pals, 2002). However, these beliefs can be effective not only for individuals' own failure situations but also for their relations with others. For example, when examined in the role of parent, these beliefs may influence people's reactions to failure situations of their children. Indeed, Haimovitz and Dweck (2016) found that parents' beliefs of failure have predictive power on their responses to failure situations of children, plus intelligence beliefs. In addition, when failure beliefs were examined in the organizational context, teams in the same organization were found to vary in their beliefs, and shared beliefs about failure were associated with group performance (Cannon & Edmondson, 2001; Martignoni & Keil, 2021). Therefore, it can be said that the belief that failure is positive or negative is an important concept that has reflections on different fields such as education, family, and organization. However, in the current failure literature, failure beliefs have only recently started to be studied and the studies are mostly based on fear of failure (Caraway et al., 2003; Conroy et al., 2002; Elliot & Thrash, 2004; Neff et al., 2005). Beliefs of failure, on the other hand, are similar to but different from the concepts of failure avoidance and fear of failure. These beliefs define how failure is perceived and interpreted and include basic beliefs about whether failure as an opportunity or threath (Haimovitz & Dweck, 2016).

Fear of failure has many descriptions but shortly is used for the motivation to avoid failure and its possible negative consequences (Elliot, 1999) and is often measured by addressing individuals' beliefs about the failure consequences (Conroy, 2001). However, there remains a notable absence in the works on fear of failure, particularly regarding the exploration of beliefs focusing on the positive side of failure. Additionally, not all people with low fear of failure see failure as enhancing, and some do not consider failure as a threatening factor due to apathy or lack of motivation (De CasTella et al., 2013).

To summarize, examining how individuals evaluate failure is important in terms of understanding failure in all its aspects and contributing to studies to increase the resilience and perseverance of individuals in cases of failing (Yeager & Dweck, 2012). In addition, since these beliefs will reveal how failure is conceptualized by individuals, it may enhance comprehension of causal attributions attributed to failure and fearing failure, as extensively explored topics.

Examining international studies, one scale developed by Haimovitz and Dweck (2016) to measure parents' mindsets about failure in US appears to be most relevant, as it is similar to the purpose of the study. Although their conceptualization of failure and the structure of the scale provided substantial resource for this study, decision for development of a new scale over adaptation was made mainly considering the importance of cultural, social, and developmental context in the belief systems. Hence, several studies indicate differences in implicit theories across various cultural contexts and suggest that examination of these complex belief systems without reference to the cultural aspects would be incomplete to understand the construct itself (Choi & Nisbett, 2000; Ji et al., 2000; Nisbett et al., 2001). Besides its cultural importance, developing a new scale of

failure beliefs is also important to address the controversial issues concerning the measurement of implicit theories in the literature (Lüftenegger & Chen, 2017).

When it is examined in Turkish culture, although there are few studies investigating the concepts related to the failure beliefs of individuals, it is seen that measurement tools for fear of failure or failure attributions are mostly used in these studies. However as stated earlier, these scales are based on the conceptualization of failure avoidance or fear of failure which theoretically differ from failure beliefs, especially the beliefs that includes “failure is enhancing”. To illustrate more, scales measuring fear of failure are about why people worry or afraid of failing and based on the models showing the aversive consequences of failure. For example, Inventory of Performance Failure Appraisal, one of widely utilized scales for measuring failure fear, evaluates individuals’ thoughts regarding outcomes of failure. They may include concerns about experiencing shame, apprehensions about losing social effects, and worry over disappointing significant people (Kahraman & Sungur, 2016). Although these beliefs are similar to the beliefs that failure is harmful, they focus on the negative consequences of failure in different areas and most importantly lack to measure the positive conceptualization of failure. As other examples of the failure scales, there are many to measure failure attributions, mainly based on Weiner’s attribution model (Güneş, 2022; Sucuoğlu, 2014). However, unlike beliefs about the nature of the failure as in failure beliefs, these scales assess what kind of causal factors people attribute their failures to such as their skills, effort, chance etc. (Weiner, 2010).

To sum up, reviewing the current literature, no specific scale measuring failure beliefs independently of the concepts as fear of failure or failure attributions are found in Turkish literature. Therefore, there is a need to develop a scale of failure beliefs by taking cultural factors into account for the future studies to be carried out in the field in the country. Regarding this deficiency in the studies, this work set out to create Failure Beliefs Scale within the implicit beliefs proposed by Dweck (1999, 2006) to contribute to the research of failure beliefs.

Methodology

The focus of this research is to generate "Failure Beliefs Scale (FBS)" within the implicit belief framework. In the study, a sequential exploratory strategy of mixed method designs is used as suggested when researchers need to develop a new measurement tool (Creswell, 2017, p. 226). Adopting the three-phase approach of sequential exploratory strategy, firstly qualitative data obtained from a literature review and after that, focus groups were gathered. Building from their results, an item pool was generated for the development of the intended scale, and lastly, it was implemented with samples (Creswell & Plano Clark, 2018, p. 127).

Study Groups

The study included adults who were reached through the convenience sampling method and who volunteered to participate in the study (Erkuş, 2011).

This scale development study includes several samples consisting of qualitative and quantitative groups. To gather qualitative data, two focus groups were conducted, the first with 9 participants and the second with 15 participants. For the quantitative data of the study, there were mainly two separate groups, including a total of 887 adults. Sample size adequacy was determined in line with Worthington and Whittaker’ (2006) suggestions as having at least 300 participants and 10:1 ratio of participants to number of parameters in the study groups. Therefore, the first quantitative data sample encompass 569 adults for the Exploratory Factor Analysis (EFA) to reveal the scale framework. The second quantitative sample consisted of a total of 318 adults who were reached for Confirmatory Factor Analysis (CFA) to verify the scale structure uncovered in EFA. Lastly, a group of totally 37 adults were reached to establish test-retest reliability over time intervals. Demographic characteristics of participants in study is given in Table 1 below.

Table 1. Sample Demographics

Study Groups	Characteristics		N	%	Mean Age
Focus Groups	Gender	F	15	62,5	21.12
		M	9	37,5	(SD= 0,95)
EFA Group	Gender	F	405	71,2	24.61 (SD= 6,819)
		M	162	28,5	
	Educational Status	Lower than Bachelor's	298	52,3	
		Bachelor's Degree	230	40,4	
		Postgraduate Degree	20	3,5	
	Socio-economic status	Low	64	11,2	
		Middle	447	78,6	
		High	22	3,9	
Employment Status	Employed	254	44,6		
	Unemployed	315	55,4		
CFA Group	Gender	Female	237	74,5	24.31 (SD= 6,036)
		Male	80	25,2	
	Educational Status	Lower than Bachelor's	154	48,4	
		Bachelor's Degree	157	49,4	
		Postgraduate Degree	5	1,6	
	Socio-economic status	Low	34	10,7	
		Middle	254	79,9	
		High	8	2,5	
Employment Status	Employed	116	36,5		
	Unemployed	176	55,3		
Test-retest Group	Gender	Female	33	89,2	21,78
		Male	4	10,8	(SD= 0,85)

Note. Missing data are not included in numbers and percentages.

Table 1 shows participants' demographic characteristics. However, research sample is mostly female, and the self-perceived socio-economic status of the individuals is at the middle level. In addition to the characteristics mentioned in the table, 57 (10%) of them in the EFA and 22 (6.9%) of them in the CFA group were parents, and 73 (12.8%) of them in the EFA group and 31 (9.7%) of them in the CFA group were married.

Data Collection

During the data collection, firstly ethical approval was ensured (ethical approval information is given in the last section of the study in detailed.) After getting ethical approval, for the qualitative data gathering, face to face groups were arranged and the group interviews were done by the researchers and lasted approximately 30-35 minutes. For quantitative data collection, scale was organized both online and as a pencil and paper application and filling the form of the scale lasted approximately 5-10 minutes. Based on the participants preference, both online "google forms" and pencil and paper applications were used to accumulate quantitative data.

Development of Scale Procedure

The study implemented a series of procedural steps in developing the scale (DeVellis, 2017; Erkuş, 2012) and the stages followed in this process are given below.

Reviewing the related literature and defining the construct to be measured. In the literature, different conceptual approaches reveal individuals' thoughts and beliefs about failure. In this study, implicit beliefs were preferred because it creates a mental framework for cognitive systems and includes beliefs that include the definition of failure both as a support and an obstacle. In this context, failure beliefs, as in the focus, include core beliefs that express how individuals perceive, define, and interpret failure.

Writing behavioral indicators and creating the item pool. A two-stage process was conducted in the creation of the item pool. Since there is a basic theoretical framework in the literature on failure beliefs, items based on the theory were written in the first stage. Then, the pool of items was expanded following interviews with

focus group. Together with interviews, whether the theoretical construct based on failure beliefs is relevant in the culture and whether there is a need to make additions to the items written based on the theory were critiqued. As a matter of fact, interviews and focus groups, in addition to literature reviews, is considered important and recommended in the conceptualization of the construct, item writing, and dimension determination processes (Devellis, 2017).

Literature review in creating item pool. In the first stage of creating the item pool, the theoretical foundations of the construct to be measured were examined and its behavioral indicators were noted by reviewing the literature on the implicit theories of failure. In this context, individuals' beliefs that "failure is enhancing" or "failure is debilitating" were examined. As indicators of these beliefs, the failure beliefs that best represent and reflect these implicit constructs that individuals have were found and these beliefs were transformed into item expressions and an item pool including 38 items was obtained and given in Table 2 below.

Table 2. Resources, Implicit Beliefs, Behavior Indicators, and Written Scale Items.

Resource	Implicit Beliefs	Behavior Indicators	Related Scale Items
(Chiu et al.1997), (Dweck, 1986, 1999, 2006), (Dweck & Master, 2008, 2009) (Dweck & Leggett, 1988)	"Failure is enhancing."	Evaluating failure as a positive experience; evaluating failure as an opportunity for development, learning and progress; believing that failure increases performance, productivity, and motivation; benefiting from failure	M-2, M-4, M-6, M-7, M-9, M-13, M-16, M-18, M-19, M-22, M-23, M-25, M-26, M-29, M-31, M-34, M-36, M-37
(Dweck et al., 1995), (García-Cepero & McCoach, 2009) (Haimovitz & Dweck, 2016), (Lee, 1996)	"Failure is debilitating."	Evaluating failure negatively; seeing failure as an obstacle to development, learning and progress; believing that failure reduces performance, productivity, and motivation; avoiding failure	M-1, M-3, M-5, M-8, M-10, M-11, M-12, M-14, M-15, M-17, M-20, M-21, M-24, M-27, M-28, M-30, M-32, M-33, M-35, M-38

Focus groups on expanding item pool. For the group interviews, the following questions were created by investigating the similar qualitative studies. In the groups, the generated following questions were asked to the participants and their definitions and experiences of failure were obtained.

- What is the definition of failure for you? If you had to define failure, how would you define it?
- If you had to evaluate failure positively or negatively, which way would your opinion be? Why?
- Can you recall a situation in which you failed and share with us your experiences in that situation? How did you feel, what did you think and what did you do in that situation?

In the data obtained from the groups, it was seen that the participants' beliefs about failure were compatible with the differences in the failure beliefs discussed in the theoretical framework. In this context, it was seen that failure was intensively evaluated as an obstacle in the views of the participants. However, in parallel with the literature, there were also views on defining failure as a positive and developmental experience. In the views of some participants, the idea that the meaning of failure as positive or negative can change depending on the situation was found.

Similar to the theoretical belief that failure is enhancing, participants stated the following:

(Participant 8 from the 2nd Focus Group, FG2.P8) "Failure is not getting what I want, and it is positive because failure makes me more ambitious. Being very successful does not give me much."

(FG2.P7) "Failure is what I feel when I do not do the work we need to do in a planned and programmed way. Failure is positive because I think that every work that could not be done leads to better work next time."

Unlike the participant statements above, some participants' views reflect the theoretical beliefs that failure is debilitating. In this context, examples of participant views are presented below:

(FG1.P7) "Failure is the situation in which the expectations are not met in an area where the individual feels competent and has various expectations. Failure is negative ... It causes a loss of hope and disappointment. When I fail, my self-confidence is damaged, and I may despair and not think of trying again."

(FG2.P13) "Failure is not being able to do things that are doable, that are not impossible to do, because of our own shortcomings. Failure is negative because it leaves negative traces in our lives. It leaves us behind; it means falling behind in areas such as education and social life."

(FG2.P14) "Failure is not getting what I want, not achieving what I have worked hard for. Failure is negative in my opinion because when I fail in something I have worked hard for, I first get discouraged and then I don't want to work with the hopelessness of being tired."

Examples of views that failure can be both positive and negative are presented below:

(FG1.P8) "Failure is not achieving my goals. I think it is both positive and negative. Positive because we can see our shortcomings and focus on them. People are not always perfect in every way. It provides awareness of this. Negative because I don't achieve my goal. It's bad to not be able to accomplish something we could have done."

(FG2.P9) "Failure is when the things that I put time and effort into turn out to be negative. Failure can be positive or negative. Positively it can encourage you to work harder, psychologically it can make you pessimistic."

Through transcripts of interviews analyzed via content analysis, 10 items were incorporated into item pool, resulting in a total of 48 items. To summarize the content analysis of focus group data, the details regarding the codes, themes and items added to the item pool are given Table 3 below.

Table 3. Codes, Themes, and Number of Added Items

Codes	Themes	Added Items
Learning experience, preparing for the better, set an example	Opportunity	2 items
Prevent from pursuing dreams or goals	Obstacle	2 items
Self-respect, loss of respect, self-efficacy, loss of efficacy	Self-confidence	2 items
Pessimism, hopeless, disappointment, negative trace, permanent trace	Negative effects	1 item
Discouragement, ambition, not able to sustain	Motivation	1 item
	Total	8 items

Deciding on assessment format, item type, and response categories. Initially, the most appropriate assessment format for the scale construct was examined (Erkuş, 2012). Individual items were formulated as propositional statements for attaining the participants' level of agreement with these statements with Likert-type response options, which stands out as an effective format for measuring individuals' thoughts, beliefs, and attitudes. Thus, the 6-point Likert style was preferred in order to avoid a midpoint expressing individuals' ambivalence (DeVellis, 2017).

Obtaining expert opinion. Item pool was evaluated by experts (Erkuş, 2012), and details of getting expert opinion in the study are included in the Tablo 4 below.

Table 4. Details of Getting Expert Opinion

The field of experts	Criteria for choosing the expert	Number of Experts
Assessment and Evaluation	Have at least a master's degree in the field and have taken at least one course on scale development	2
Psychological Counseling and Guidance	Have at least a graduate degree in the field and have taken at least one course including the topics of cognitive structures as beliefs and implicit theories	5
Turkish Language and Literature	Have at least a graduate degree in the field	1
	Total	8

Regarding expert opinions, the items evaluated by at least one expert as having "low" power to represent the construct and the items with suggestions were examined in detail. They were evaluated within the theoretical framework of implicit theories and how many items should be removed or revised were determined accordingly.

For revision of the items, four of them were reworded based on expert opinion and for the elimination, both

expert opinion and the ideal number of items in the pool were considered. At this point, although scales currently in use to measure constructs of implicit theories such as intelligence or personality (Dweck, 1999), and also failure beliefs (Haimovitz & Dweck, 2016) are short as around six indicating that a large item pool might not be required, DeVellis's (2017, p.131) suggestion of redundancy with respect to the construct was adopted and a 40-item pool was finalized by removing only eight items evaluated as low to represent the construct by experts.

Preparing Data for Analysis

Firstly, wrong data entry was checked on the data obtained from the participants, and it was observed that there was no wrong coding or data entered. After that, the examination of missing data and normality examinations were carried out as preliminary studies (Erkuş, 2012).

Data Analysis

Qualitative data analysis. Initially, a literature review was conducted on the implicit theories and failure beliefs, and keywords as "failure", "implicit theories" and "scales" were used to reach the relevant literature on Web of Science and the studies conducted on similar theoretical base and had open access were selected for investigation. The details about these relevant studies and the behavior indicators of the construct written based on the investigation of these studies were given in Tablo 2.

Secondly, data from the focus groups underwent content analysis, with researchers collaboratively coding and categorizing themes. Coding was done mainly based on the participant expressions and themes were obtained by revealing the main ideas of similar codes considering both participant expressions and literature review on failure beliefs (Creswell, 2007). Details concerning the analysis including codes and themes were given in Table 3.

Quantitative data analysis. For the quantitative data, the data from the first sample were subjected to Exploratory Factor Analysis (EFA), followed by Confirmatory Factor Analysis (CFA) on data from the second sample to test and validate the scale construct (DeVellis, 2017).

Testing main assumptions of normality to perform maximum likelihood (ML) as an extraction method in EFA, skewness values and kurtosis values spanned between .012 and -1.207, showing proof for normally distributed data. Providing further evidence for multivariate normality, univariate normality checks were done in both samples. Z-scores for all variables were checked and found that they fell within the range of ± 3.29 . Additionally, Chi-Squared Q-Q plots were examined and indicated an underlying normally multivariate distribution. (Tabachnik & Fidell, 2007).

After obtaining evidence for meeting the assumption of normal distribution, Kaiser-Meyer Olkin (KMO) coefficient was investigated and found .97. For second assumption in analyzing factors, Bartlett Sphericity test were performed and found significant ($\chi^2(780) = 13859,271; p=0.00$), providing evidence to perform factor analysis (Tabachnik & Fidell, 2007). In addition to these values, examining the anti-image correlations of the items showed additional evidence to perform factor analysis on the basis of the item, where the lowest value was .942.

In EFA, with ML extraction method, factor structure of the scale was clarified by using direct oblimin which is the oblique rotation method recommended for the related factors (Osborne, 2015). The number of factors was reached using eigenvalues suggested by Kaiser (1960), plus scree plot method introduced by Cattell (1966), and also parallel analysis by Horn (1965). Pearson Product-Moment Correlation performed in the examination of the relationship among factors. As Hair and colleagues (2014) pointed out, research calculated Average Variance Extracted (AVE), plus Composite Reliability. For item discrimination of the scale, t-test analysis were run.

For CFA, steps provided by Schumacher and Lomax (2010) for conducting CFA were applied. In the confirmatory factor analysis, after model specification and identification on EFA findings, with ML estimation, model testing was made by assessing the model fit by various indexes such as absolute fit indexes, and comparative fit index. While there are plenty of criteria, in this work mainly chi-square, RMSEA, plus SRMR were provided with additional indexes as emphasized by Schumacher and Lomax (2010) and given in Table

9.

Whether the measured construct maintains equivalence across genders was assessed by measurement invariance through sequential evaluation of fit between specified model and observed data. Fitness of model was evaluated by using multiple fit statistics as suggested by many recent studies (Kline, 2015).

For the reliability analysis of the scale, along with Cronbach's alpha, MacDonald's omega were computed for the estimation of internal consistency and omega was generated by using Hayes omega macro (Hayes & Coutts, 2020). Test-retest reliability was estimated with coefficient of stability by calculating Pearson Product-Moment Correlation.

As the data analysis programs, Excell 2010, SPSS 27.0 and for CFA, Amos 22.0 package programs were utilized in this research.

Results

Findings Regarding the Validity of the Scale

Construct validity: Exploratory factor analysis. For the construct validity, EFA was conducted using ML extraction method. In the first analysis, no rotation method was used to understand the overall structure of the scale. As a result of the first analysis, a 5-factor structure with an eigenvalue greater than one explaining 56.19% of the total variance was found and presented in Table 5.

Table 5. Factor structure in the first EFA results.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	18,265	45,664	45,664	17,836	44,591	44,591
2	2,508	6,271	51,934	2,102	5,254	49,845
3	1,502	3,755	55,689	,989	2,473	52,318
4	1,316	3,290	58,979	,889	2,223	54,540
5	1,137	2,843	61,822	,659	1,648	56,188
6	,982	2,454	64,276			

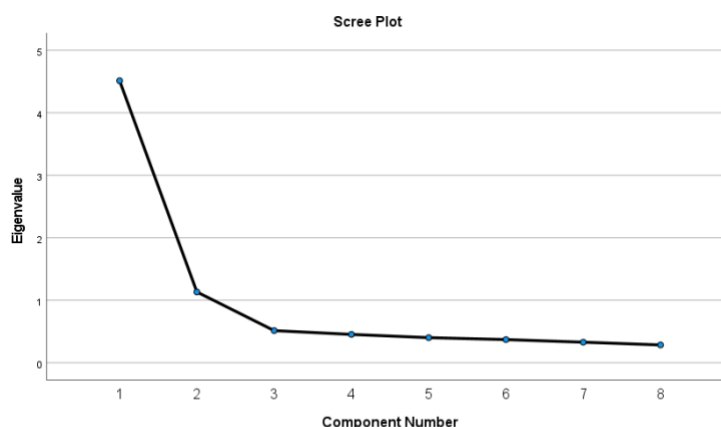
In light of these initial findings indicating a multi-factor structure, the item loadings of the items on the factors were clarified by using direct oblimin (Osborne, 2015), which is the oblique rotation method recommended for the related factors among the rotation methods in the exploratory factor analysis, and after the rotation, the item factor loadings of the items were examined one by one.

For each item in the scale, evaluations were made based on item loads, and the scale structure was investigated in detail. In this context, items that gave high loads to more than one factor, had a factor load of less than .40, and that the difference between the factor loadings given to two different factors was less than .15 were removed from the scale (Worthington & Whittaker, 2006). In this elimination process, while the main applied criteria were significant loading magnitude and cross loadings of the items, theoretical convergence was also considered critical. In this respect, examining the highest inter-item correlations, item eliminations were conducted to ensure that the scale does include items theoretically distinct enough to avoid artificially inflating reliability levels. Lastly, the number of items per factor was taken into consideration through the item deletion process, and each factor was extracted to include at least three items (Carpenter, 2018).

As a result of the examinations made on the basis of the criteria as factor loading magnitudes, cross loadings, inter-item correlations, theoretical convergence and number of items per factor, 8 items that best represented the construct of the scale were obtained. As a result of item examinations and eliminations, it was seen that these items remaining in the scale were grouped under two factors and that the two-factor structure explained 61% of the total variance.

In addition to evaluating the factors based on eigenvalues suggested by Kaiser (1960), the scree plot suggested by Cattell (1966) was also examined in the study. The scree plot for the 8-item scale is given in Figure 1 below.

Figure 1. Failure Beliefs Scale scree plot.



When the scree plot is examined, it is seen that there is one dominant factor in the scale construct, but the second factor is also important and contributes considerably to the construct. However, it is seen that the flattening in the graph occurs in the third factor with an eigenvalue less than 1. In this case, the parallel analysis method proposed by Horn (1965) was used to provide additional evidence for determining the factors of the scale. Based on the criticism that the eigenvalue greater than 1 method is affected by sampling errors in correlation matrices in determining the factors, this method states that more than the required number of factors can be determined in eigenvalue-based factor determination (Hayton et al., 2004).

In this method, which is carried out in the SPSS program with syntax developed by O'Connor (2000), eigenvalues in the 95% confidence interval are calculated in the 1000-person data set randomly generated from the data set. The point where the eigenvalues of the parallel data are greater than the eigenvalues in the actual data set is used to determine the number of significant factors. The eigenvalues and number of factors determined by parallel analysis are given in Table 6.

Table 6. Eigenvalues and number of factors determined by parallel analysis method.

Eigenvalue	Factor 1	Factor 2	Factor 3
Raw Data	4,513174	1,132610	0,514241
Parallel Data	1,179398	1,113079	1,062829

n=1000

When Table 6 is examined, it is seen that the values produced from the parallel data in the third factor are larger than the values produced from the raw data, so the parallel analysis method supports the 2-factor structure. The factor loadings for the 8 items and the two-factor scale supported by the analyses described above are presented in Table 7.

Table 7. Item factor loadings of Failure Beliefs Scale.

Factors	Items	Factor 1	Factor 2
Failure is Enhancing	Item 18	.708	
	Item 23	.801	
	Item 26	.864	
	Item 31	.765	
Failure is Debilitating	Item 14		.848
	Item 17		.824
	Item 27		.610
	Item 40		.728
	Eigenvalue	4,128	.756
	Explained Variance	51,597	9,444
	Total Variance Explained	61,041	

Note: loadings < 0.11 suppressed

DeVellis (2017) stated that an item should have a factor loading of at least .40 in order to be represented in a factor. When the factor loadings in Table 7 are examined, it is seen that the factor loadings of all items are above .61. However, as a result of the examination of the items on the basis of the literature, it is seen that the loadings of all items in the first factor called belief as "failure is enhancing" are above .76 and explain 51.6% of the total variance. Similarly, for the second factor, the contents of the items were analyzed based on the literature and the factor was named "belief that failure is debilitating". The items in this factor had values between .61 and .85 and explained 9.4% of the total variance. Naming of the factors as "enhancing and debilitating" were based on the investigation of the items and also literature which item pool was built upon. To exemplify, enhancing failure beliefs factor includes the belief statements such as failure as an opportunity or supporting development whereas debilitating failure belief items contain statements as failure as a negative trace or decreasing motivation.

As a result of correlation between the factors, a moderate negative correlation $r(552) = -.60, p < .001$ was found between the two factors.

Convergent validity. Convergent validity was used to provide evidence for the quality of the scale by calculating the AVE and CR values. For the 1st factor, the AVE value was .62, and the CR value was .87. For the 2nd factor, the AVE value was .58, and the CR value was .84. Considering the criteria of $AVE > .50$ and $CR > .70$ (Hair et al., 2014), it can be said that convergent validity of the scale is satisfied.

Findings related to item validity.

Item validity analyses were conducted in investigation of whether each item in scale measures the construct and determine the discrimination levels. In this direction, the significance of the difference between the item scores of two groups on total score was calculated. The findings are stated in Table 8.

Table 8. Findings Related to Item Validity.

Factor	Items	Group	n	\bar{x}	SD	t	p
Debilitating	Item14	Upper %27	150	5,05	0,89	-36,580	.000
		Lower %27	150	1,68	0,70		
	Item 17	Upper %27	150	4,97	0,76	-31,910	.000
		Lower %27	150	1,91	0,89		
	Item 27	Upper %27	150	4,55	0,99	-23,623	.000
		Lower %27	150	1,94	0,93		
	Item 40	Upper %27	150	4,91	0,92	-33,510	.000
		Lower %27	150	1,65	0,75		
Enhancing	Item 18	Upper %27	150	5,73	0,48	-22,445	.000
		Lower %27	150	3,49	1,12		
	Item 23	Upper %27	150	5,77	0,42	-27,435	.000
		Lower %27	150	3,23	1,06		
	Item 26	Upper %27	150	5,55	0,56	-29,367	.000
		Lower %27	150	2,89	0,96		
	Item 31	Upper %27	150	5,73	0,46	-31,151	.000
		Lower %27	150	2,95	0,99		
		Lower %27	150	1,65	0,75		

n=554

Table 8 shows that because groups' mean scores differed significantly for each item (Kelley, 1939), scale comprises items that measure scale construct and are discriminative.

Construct validity: Confirmatory factor analysis.

The structure of the Failure Beliefs Scale was tested with CFA in the second stage to examine the accuracy of the scale structure found in the first study with EFA (Tabachnick & Fidell, 2007).

The fit indices obtained for the two-factor "Failure Beliefs Scale" consisting of eight items were examined and given in Table 9 below.

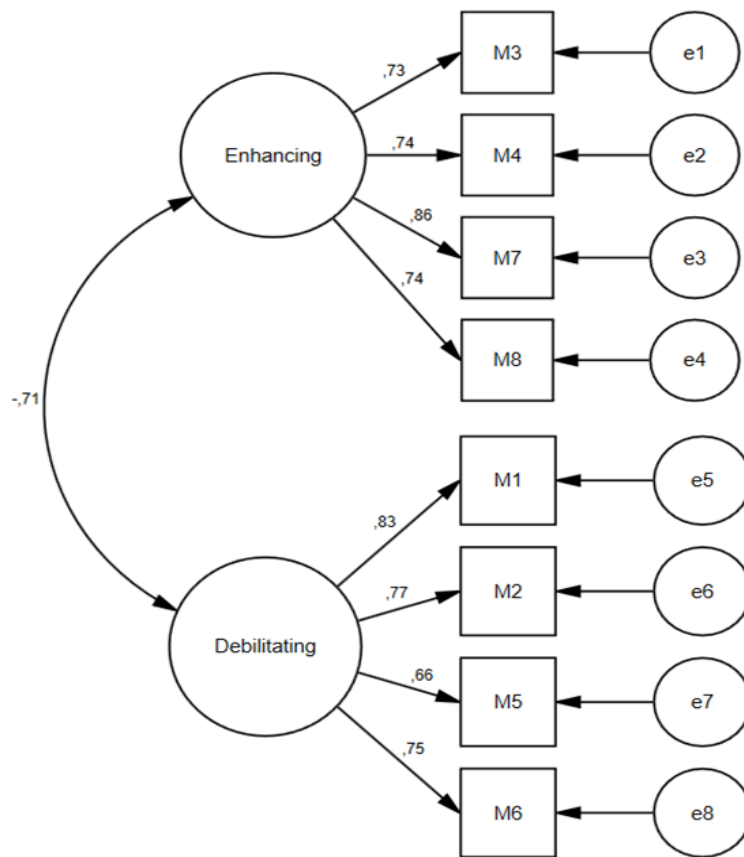
Table 9. Failure Beliefs Scale Goodness of Fit Indices.

χ^2	Sd	χ^2/sd	RMSEA	Pclose	CFI	NFI	GFI	AGFI	RMR	SRMR
27,457	19	1,445	,037	,732	,993	,977	,979	,960	,045	,026

The fit values given in Table 9 shows that the goodness of fit indices obtained from the CFA results of the Failure Beliefs Scale indicates a good fit by considering the cut-off values suggested by Marcoulides and Schumacher (2001) and Schermelleh-Engel, Moosbrugger and Müller (2003). Since evaluation of the overall fit indices indicated good fit of the model, a model modification was not needed.

The path diagram obtained with CFA for the eight-item Failure Beliefs Scale is given in Figure 2. Figure 2 shows that the factor loadings of the 8 items in the Failure Beliefs Scale vary between .66 and .86 and are sufficient in terms of the criteria specified for factor loadings (DeVellis, 2017). In conclusion, the goodness-of-fit indices and factor loadings obtained with the analyses provide evidence that the FBS is a valid scale.

Figure 2. Failure Beliefs Scale path diagram.



Measurement invariance. A step-up approach in examination of different measurement invariance forms respectively as configural, metric, scalar and strict was adopted across genders and the results were reported according to the suggestions made by Punick and Bornstein (2016) in Table 10.

Table 10. Measurement Invariance Fit Indexes.

Model	χ^2 (df)	CFI	RMSEA 90% CI	SRMR	TLI	$\Delta\chi^2$ (Δ df)	Δ CFI	Δ RMSEA	Decision
M1. Configural	40.590 (38)	.998	.021 (.00-.061)	.028	.997	-	-	-	-
M2. Metric	50.293 (44)	.995	.030 (.00-.063)	.053	.993	9.703 (6)	-.003	.009	Accept
M3. Scalar	56.657 (50)	.994	.029 (.00-.061)	.053	.994	6.364 (6)	-.001	-.001	Accept
M4. Strict	71.060 (58)	.989	.038 (.00-.065)	.056	.989	14.403 (8)	-.005	.009	Accept

Note. N = 316; group 1(female) n = 236; group 2(male) n = 80.

When Table 10 is examined and model comparison statistics including the comparisons of M1 to M2, M2 to M3, and finally M4 to M3, were evaluated, it is evident that each comparison met the statistical criteria for changes in chi-square, in addition to alternative fit indices, confirming satisfactory model fit.

Findings Regarding the Reliability of the Scale

Reliability calculations were made in the two study groups reached in the study. As reliability analysis, Cronbach's alpha, along with McDonald's omega were calculated for both factors for internal consistency.

Table 11. Reliability Types and Coefficients.

	Cronbach's alpha		McDonald's Omega		Stability
	EFA Group	CFA Group	EFA Group	CFA Group	Test-retest
First Subscale	.86	.85	.87	.85	.88
Second Subscale	.85	.84	.85	.84	.80

As it is summarized in Table 11, the α coefficient of the first factor was found .86 in EFA sample and .85 in CFA sample. The α coefficient of second factor was .85 in EFA and .84 in CFA sample. As a result, since these values are above .70, FBS is found to be internally consistent and reliable (Creswell, 2012).

In addition to the internal consistency evaluation, with a test and retest application, scale reliability over time was ensured. In this context, 37 adults were recruited for this application at three-week intervals, considering the time intervals recommended in the literature (Tavşancıl, 2005). In analysis finding, test-retest reliability of two factors were .88 and .80. Values above .70 provided evidence that the scale was reliable over time (Robinson, Shaver, & Wrightsman, 1991).

Discussion

This scale development study aims to measure the failure beliefs of adults in Turkish culture by addressing failure, as widely investigated topic in the literature for many years, based on Dweck's implicit theories. Research analyses revealed the eight-item, two-factor Failure Beliefs Scale as an accurate tool in measurement of adults' beliefs about failure within the scope of implicit theories. In this respect, study provides several evidence regarding scale validation. Firstly, qualitative data collection and analysis were conducted with reviewing relevant works, plus participants by focus groups. Building upon these qualitative investigations, scale factor structure was investigated with EFA and CFA and with item discriminative analysis, scale validity was supported. Furthermore, in measurement invariance, scale ensured psychometric equivalence of the construct across genders. Lastly, calculating internal consistency and stability coefficients as alpha, and omega, the scale showed strong reliability evidence.

As the scale structure, two factors in the scale are found to be negatively and moderately related to each other. The first factor of the scale measures the belief that failure is enhancing based on the literature with four items. High scores obtained from this subscale express individuals' beliefs that failure is enhancing. The second factor comprises four items and shows the belief that failure is debilitating. High scores obtained from this subscale indicate individuals' beliefs that failure is debilitating. A minimum score of 4 with a maximum of 24 is obtained from each subscale. No reverse items are included in the tool and two subscales are scored within themselves.

Failure Beliefs Scale with two separate factors seems to create a critical issue that needs to be discussed in the context of implicit theories. In this study, failure beliefs were defined in two different constructs as enhancing and debilitating failure beliefs based on implicit theory research, and in parallel, the scale findings provided evidence for these two different factors. However, it is seen in the literature that the debate on unidimensionality and bidimensionality in measuring implicit beliefs continues (Lüftenegger & Chen, 2017).

The first definitions of these two beliefs within the scope of implicit theory research treat these beliefs with an understanding of two constricting extremes in one single dimension (Dweck et al., 1995). The treatment of these beliefs as two opposite views has manifested itself in the use of unidimensional scales in their measurement. In unidimensional scales used to measure these beliefs, one of the two beliefs is perceived as a reverse item and added to the total score (Blackwell et al., 2007; Crum et al., 2013; Dweck, 2008).

Within implicit theory framework, seeing these two different beliefs as opposite ends of a unidimensional structure is criticized both theoretically and methodologically. Theoretically speaking, Dweck, Chiu, and Hong (1995) stated in their study that people may hold both of these seemingly opposite beliefs at the same time. Indeed, Anderson (1995) mentioned that these beliefs can be easily accessible knowledge structures for people and argued that people can access these beliefs depending on which beliefs are made more visible by specific contexts. Methodologically speaking, considering implicit beliefs as two opposite poles of a single dimension may lead to negative results such as loss of variance between individuals, loss or exaggeration in effect size, or decrease in reliability of scale depending on the method and analysis (MacCallum, 2002). However, similar to this current study results, statistical methods used in other current scale development studies supported the two-dimensional structure for these beliefs. For example, Dupeyrat and Marine (2005) found evidence for two separate factors in their study using exploratory factor analysis. Besides, Tempelaar et al. (2014) found that, using confirmatory factor analysis, structure with two separate factors showed a superior fit compared to others in their study. Summing up, many other studies using new statistical methods presents evidence to support the two-dimensional structure found in this study (De Castella & Bryne, 2015; Spinath et al., 2003).

Conclusion

Consequently, FBS generated in this research provided accurate proof to be a valid and reliable scale, in the measurement of adults' failure beliefs. Regarding this context, it is thought that this scale will offer significant theoretical insights and practical implementations to the related literature. This scale will contribute to works that will examine individuals' perceptions and experiences of failure in the fields of education and career. Moreover, testing the scale in different sample groups may be offered as a contribution to addressing failure in different contexts. Finally, there are some limitations in this scale development study. It is seen that most of the study groups consisted of women and individuals from middle social economic status. In this context, to overcome this limitation, it may be recommended to ensure more intensive participation of men and individuals from different social economic levels in different studies to be conducted in the future.

Author Contributions: All authors have worked together and cooperatively in the study and each of them substantially contributed to the work.

Funding Disclosure: Authors did not receive any funding regarding this research.

Conflicts of Interest: There is no conflict of interest.

Data Availability: The data is available from the corresponding researcher.

Ethics Approval and Consent to Participate: The ethical committee of Gazi University approved this research on December 7, 2021 (No:2021-1113).

References

- Anderson, C. A. (1995). Implicit theories in broad perspective. *Psychological Inquiry*, 6(4), 286–290. Retrieved from <https://www.jstor.org/stable/1448941>
- Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review*, 64(1), 359–372. <https://doi.org/10.1037/h0043445>

- Berger, S., & Freud, A. M. (2012). Fear of failure, disorganization, and subjective well-being in the context of preparing for an exam. *Swiss Journal of Psychology*, 71(2), 83–91. <https://doi.org/10.1024/1421-0185/a000074>.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78(1), 246–263. <https://doi.org/10.1111/j.14678624.2007.00995.x>
- Cannon, M. D., & Edmondson, A. C. (2001). Confronting failure: Antecedents and consequences of shared beliefs about failure in organizational work groups. *Journal of Organizational Behavior*, 22(2), 161–177. <https://doi.org/10.1002/job.85>.
- Caraway K., Tucker C. M., Reinke W. M. & Hall C. (2003). Self-efficacy, goal orientation, and fear of failure as predictors of school engagement in high school students. *Psychology in the Schools*, 40(1), 417–427. <https://doi.org/10.1002/pits.10092>
- Cattell, R. B. (1966). The screen test for the number of factors. *Multivariate Behavioral Research*, 1(2), 245–276. https://doi.org/10.1207/s15327906mbr0102_10
- Chiu, C. Y., Hong, Y. Y. & Dweck, C. S. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology*, 73(1), 19–30. <https://doi.org/10.1037/00223514.73.1.19>
- Choi, I., & Nisbett, R. E. (2000). Cultural psychology of surprise: Holistic theories and recognition of contradiction. *Journal of Personality and Social Psychology*, 79(6), 890–905. <https://psycnet.apa.org/doi/10.1037/0022-3514.79.6.890>
- Conroy, D. E., & Elliot, A. J. (2004). Fear of failure and achievement goals in sport: Addressing the issue of the chicken and the egg. *Anxiety Stress and Coping*, 17(3), 271–285. <https://doi.org/10.1080/10615800412336427>
- Conroy, D.E., (2001). Progress in the development of a multidimensional measure of fear of failure: The performance failure appraisal inventory (PFAI). *Anxiety, Stress, and Coping*, 14(1), 431–452. <https://doi.org/10.1080/10615800108248365>
- Conroy, D.E., Willow, J.P., & Metzler, J.N. (2002). Multidimensional measurement of fear of failure: The Performance Failure Appraisal Inventory (PFAI). *Anxiety, Stress & Coping*, 14, 431–52. <https://doi.org/10.1080/10413200252907752>
- Creswell, J. W. & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research*. (3. Ed.) Sage
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson.
- Creswell., J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches*. (2 Ed.). Sage.
- Creswell., J. W. (2017). *Araştırma deseni: Nitel, nicel ve karma yöntem yaklaşımları*. (S. B. Demir, Trans. Edt.). Eğiten Kitap.
- Crocker, J., Brook, A. T., Niiya, Y., & Villacorta, M. (2006). The pursuit of self-esteem: Contingencies of self-worth and self-regulation. *Journal of Personality*, 74(6), 1749–1772. <https://doi.org/10.1111/j.1467-6494.2006.00427.x>.
- Crum, A. J., Salovey, P., & Achor, S. (2013). Rethinking stress: The role of mindsets in determining the stress response. *Journal of Personality and Social Psychology*, 104(4), 716. <https://psycnet.apa.org/doi/10.1037/a0031201>
- De Castella, K., & Byrne, D. (2015). My intelligence may be more malleable than yours: the revised implicit theories of intelligence (self-theory) scale is a better predictor of achievement, motivation, and student disengagement. *European Journal of Psychology of Education*, 30(3), 245–267. <https://doi.org/10.1007/s10212-015-0244-y>
- De Castella, K., Byrne, D., & Covington, M. (2013). Unmotivated or motivated to fail: A cross-cultural study of achievement motivation, fear of failure, and student disengagement. *Journal of Educational Psychology*, 105(3), 861–880. <https://doi.org/10.1037/a0032464>.
- DeVellis, R. F. (2017). *Scale development: Theory and applications* (27. Eds.). Sage.
- Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(1), 1087–1101. <https://psycnet.apa.org/doi/10.1037/0022-3514.92.6.1087>

- Dupeyrat, C., & Mariné, C. (2005). Implicit theories of intelligence, goal orientation, cognitive engagement, and achievement: A test of Dweck's model with returning to school adults. *Contemporary Educational Psychology*, 30(1), 43–59. <https://doi.org/10.1016/j.cedpsych.2004.01.007>
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41(10), 1040-1048. <https://psycnet.apa.org/doi/10.1037/0003-066X.41.10.1040>
- Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Psychology Press.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random House.
- Dweck, C. S. (2008). Can personality be changed? The role of beliefs in personality and change. *Current Directions in Psychological Science*, 17, 391–394. <https://doi.org/10.1111/j.1467-8721.2008.00612.x>
- Dweck, C. S., & Master, A. (2009). Self-theories and motivation: Students' beliefs about intelligence. In K.R. Wentzel and A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 123-140). Routledge.
- Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: a world from two perspectives. *Psychological Inquiry*, 6(4), 267-285. Retrieved from <https://www.jstor.org/stable/1448940>
- Dweck, C.S. & Leggett, E.L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273. <https://doi.org/10.1037/0033295X.95.2.256>
- Dweck, C.S. & Master, A. (2008). Self-theories Motivate Self-Regulated Learning. In D. Schunk & B. Zimmerman (Eds). *Motivation and Self-Regulated Learning: Theory, Research, and Applications* (pp. 31-51). Erlbaum.
- Dweck, C.S. & Molden, D. (2006). Self-theories: their impact on competence motivation and acquisition. In A. Eliot and C. Dweck (Eds.), *Handbook of competence and motivation* (pp. 122-140). The Guilford Press.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34(3), 169-189. https://doi.org/10.1207/s15326985ep3403_3
- Elliot, A. J., & Covington, M. V. (2001). Approach and avoidance motivation. *Educational Psychology Review*, 13(1), 73–92. <https://doi.org/10.1023/A:1009009018235>
- Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: approach and avoidance temperaments and goals. *Journal Of Personality and Social Psychology*, 82(5), 804-818. <https://doi.org/10.1037//0022-3514.82.5.804>
- Elliot, A.J., & Thrash, T.M. (2004). The intergenerational transmission of fear of failure. *Personality and Social Psychology Bulletin*, 30(1), 957-971. <https://doi.org/10.1177/0146167203262024>
- Elliott, E. S., & Dweck, C. S. (1988). Goals: an approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54(1), 5-12. <https://doi.org/10.1037/0022-3514.54.1.5>
- Erkuş, A. (2011). *Davranış bilimleri için bilimsel araştırma süreci*. Seçkin.
- Erkuş, A. (2012). *Psikolojide ölçme ve ölçek geliştirme*. Pegem.
- Güneş, Ö. (2022). Failure attributions and metacognitive awareness of EFL learners. *Language Awareness*, 31(1), 53-72. <https://doi.org/10.1080/09658416.2021.1960538>
- Güneş, Ö. (2022). Failure attributions and metacognitive awareness of EFL learners, *Language Awareness*, 31(1), 53-72, <https://doi.org/10.1080/09658416.2021.1960538>
- Haimovitz, K., & Dweck, C. S. (2016). What predicts children's fixed and growth intelligence mindsets? Not their parents' views of intelligence but their parents' views of failure. *Psychological Science*, 27(1), 859–869. <https://doi.org/10.1177/0956797616639727cle2017>.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.
- Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. *But... Communication Methods and Measures*, 14(1) 1-24. <https://doi.org/10.1080/19312458.2020.1718629>
- Hayton, J. C., Allen, D. G & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, 7(2), 191-205. <https://doi.org/10.1177/1094428104263675>

- Hong, Y. Y., Chiu, C. Y., Dweck, C. S., Lin, D. M. S., & Wan, W. (1999). Implicit theories, attributions, and coping: A meaning system approach. *Journal of Personality and Social Psychology*, 77(3), 588-599. <https://doi.org/10.1037/0022-3514.77.3.588>
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30(2), 179-185. <https://doi.org/10.1007/BF02289447>
- Ikedo, M., & Misawa, R. (2012). Conceptualization and measurement of beliefs about failure. *Japanese Journal of Educational Psychology*, 60(4), 367-379. <https://doi.org/10.5926/jjep.60.367>.
- Ji, L.-J., Peng, K., & Nisbett, R. E. (2000). Culture, control, and perception of relationships in the environment. *Journal of Personality and Social Psychology*, 78(5), 943-955. <https://doi.org/10.1037/0022-3514.78.5.943>
- Kahraman, N., & Sungur, S. (2016). Adaptation of the Performance Failure Appraisal Inventory (PFAI) into Turkish. *Journal of Kirsehir Education Faculty*, 17(3), 223-239. <https://doi.org/10.1080/1750984X.2021.1901299>
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20(1), 141-151. <https://doi.org/10.1177/001316446002000116>
- Kelley T. L. (1939). The selection of upper and lower groups for the validation of test items. *Journal of Educational Psychology*, 30(1), 17-24. <https://psycnet.apa.org/doi/10.1037/h0057123>
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. (4th Ed.) Guilford.
- Lee, K. (1996). A study of teacher responses based on their conceptions of intelligence. *Journal of Classroom Interaction*, 31(2), 1-12. Retrieved from <https://www.jstor.org/stable/23870415>
- Lüftenegger, M., & Chen, J. A. (2017). Conceptual issues and assessment of implicit theories. *Zeitschrift für Psychologie*, 225(2), 99-106. <https://doi.org/10.1027/2151-2604/a000286>
- MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of dichotomization of quantitative variables. *Psychological Methods*, 7(1), 19-40. <https://doi.org/10.1037/1082-989X.7.1.19>
- Marcoulides G., Schumacher R. (2001). *New developments and techniques in structural equation modeling*. Lawrence Erlbaum.
- Martignoni, D., & Keil, T. (2021). It did not work? Unlearn and try again—Unlearning success and failure beliefs in changing environments. *Strategic Management Journal*, 42(6), 1057-1082. <https://doi.org/10.1002/smj.v42.610.1002/smj.3261>
- Martin, A. J. & Marsh, H. W. (2003) Fear of failure: Friend or foe?, *Australian Psychologist*, 38(1), 31-38, <https://doi.org/10.1080/00050060310001706997>
- Martin, A. J. (2002). Motivation and academic resilience: Developing a model of student enhancement. *Australian Journal of Education*, 46(1), 34-49.
- McClelland, D. C. (1965). Toward a theory of motive acquisition. *American Psychologist*, 20(1), 321-333. <https://doi.org/10.1037/h0022225>
- Neff, K. D., Hsieh, Y.-P., & Dejjterat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, 4(3), 263-287. <https://doi.org/10.1080/13576500444000317>
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, 108(2), 291-310. <https://doi.org/10.1037/0033-295X.108.2.291>
- Nishimura, T., Seo, M., Uesaka, Y., Manalo, E., Tanaka, E., & Ichikawa, S. (2017). Development of a scale about failure beliefs in academic activities. *Japanese Journal of Educational Psychology*, 65(2), 197-210. <https://doi.org/10.5926/jjep.65.197> .
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments and Computers*, 32(3), 396-402. <https://doi.org/10.3758/BF03200807>
- Osborne, J. W. (2015). What is rotating in exploratory factor analysis?. *Practical Assessment, Research, and Evaluation*, 20(1), 2. <https://doi.org/10.7275/hb2g-m060>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41(2016), 71-90. <https://doi.org/10.1016/j.dr.2016.06.004>

- Robins, R. W. & Pals, J. L. (2002). Implicit Self-Theories in the academic domain: implications for goal orientation, attributions, affect and self-esteem change. *Self and Identity*, 1(4), 313-336. <https://doi.org/10.1080/15298860290106805>
- Robinson, J. P., Shaver, P. R. ve Wrightsman, L. S. (1991). *Criteria for scale selection and evaluation, in measures of personality and social psychological attitude*. Academic Press.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74.
- Schumacher, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (3rd ed.). Routledge.
- Spinath, B., Spinath, F. M., Riemann, R., & Angleitner, A. (2003). Implicit theories about personality and intelligence and their relationship to actual personality and intelligence. *Personality and Individual Differences*, 35(4), 939-951. [https://doi.org/10.1016/s0191-8869\(02\)00310-](https://doi.org/10.1016/s0191-8869(02)00310-)
- Sucuoglu, H. (2014). Construct validity of success/failure attribution scale among Turkish university students. *Educational Research and Reviews*, 9(11), 326-339. <https://doi.org/10.5897/ERR2014.1768>
- Sucuoglu, H. (2014). Construct validity of success/failure attribution scale among Turkish university students. *Educational Research and Reviews*, 9(11), 326-339. <https://doi.org/10.5897/ERR2014.1768>
- Tabachnick, B. G. ve Fidell, L. S. (2007). *Using multivariate statistics*. Allyn and Bacon.
- Tavşancıl, E. (2005). *Tutumların ölçülmesi ve SPSS ile veri analizi*. (2. baskı) Nobel.
- Tempelaar, D. T., Rienties, B., Giesbers, B., & Gijselaers, W. H. (2014). The Pivotal role of effort beliefs in mediating implicit theories of intelligence and achievement goals and academic motivations. *Social Psychology of Education*, 18(1), 101-120. <https://doi.org/10.1007/s11218-014-9281-7>
- Todd, F. L. (2017). Evidence regarding the internal structure: Confirmatory factor analysis. *Measurement and Evaluation in Counseling and Development*, 50(4), 239-247, <https://doi.org/10.1080/07481756.2017.1336929>
- Weiner, B. (1972). *Theories of motivation: From mechanisms to cognition*. Markham.
- Weiner, B. (2010). The development of an attribution-based theory of motivation: A history of ideas, *Educational Psychologist*, 45(1), 28-36, <https://doi.org/10.1080/00461520903433596>
- Worthington R. L., Whittaker T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, 34(1), 806 – 838. <https://doi.org/10.1177/0011000006288127>
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, 47(4), 302-314. <https://doi.org/10.1080/00461520.2012.722805>

Appendix

Başarısızlık İnançları Ölçeği

1'den 6'ya doğru ifadelere katılım düzeyi artmaktadır.

N.	Ölçek Maddeleri	Kesinlikle katılımıyo	Katılmıyo rum	Biraz katılımıyo	Biraz katılımıyo ru	Katılıyor m	Kesinlikle katılımıyo ru
1	Başarısız olmak kendime güvenimi olumsuz etkiler.	1	2	3	4	5	6
2	Bir işte başarısız olmak o işi yapmaya yönelik motivasyonumu düşürür.	1	2	3	4	5	6
3	Başarısızlıktan kaçınmak yerine faydalanmak gerektiğine inanıyorum.	1	2	3	4	5	6
4	Başarısızlıklar gelişmeme destek olur.	1	2	3	4	5	6
5	Başarısızlıklar hayatımızda olumsuz izler bırakır.	1	2	3	4	5	6
6	Başarısız olmak performansımı düşürür.	1	2	3	4	5	6
7	Başarısızlık deneyimlerimin her biri benim için bir fırsattır.	1	2	3	4	5	6
8	Başarısızlıklarımın beni daha iyi başarılarla hazırladığını düşünüyorum.	1	2	3	4	5	6