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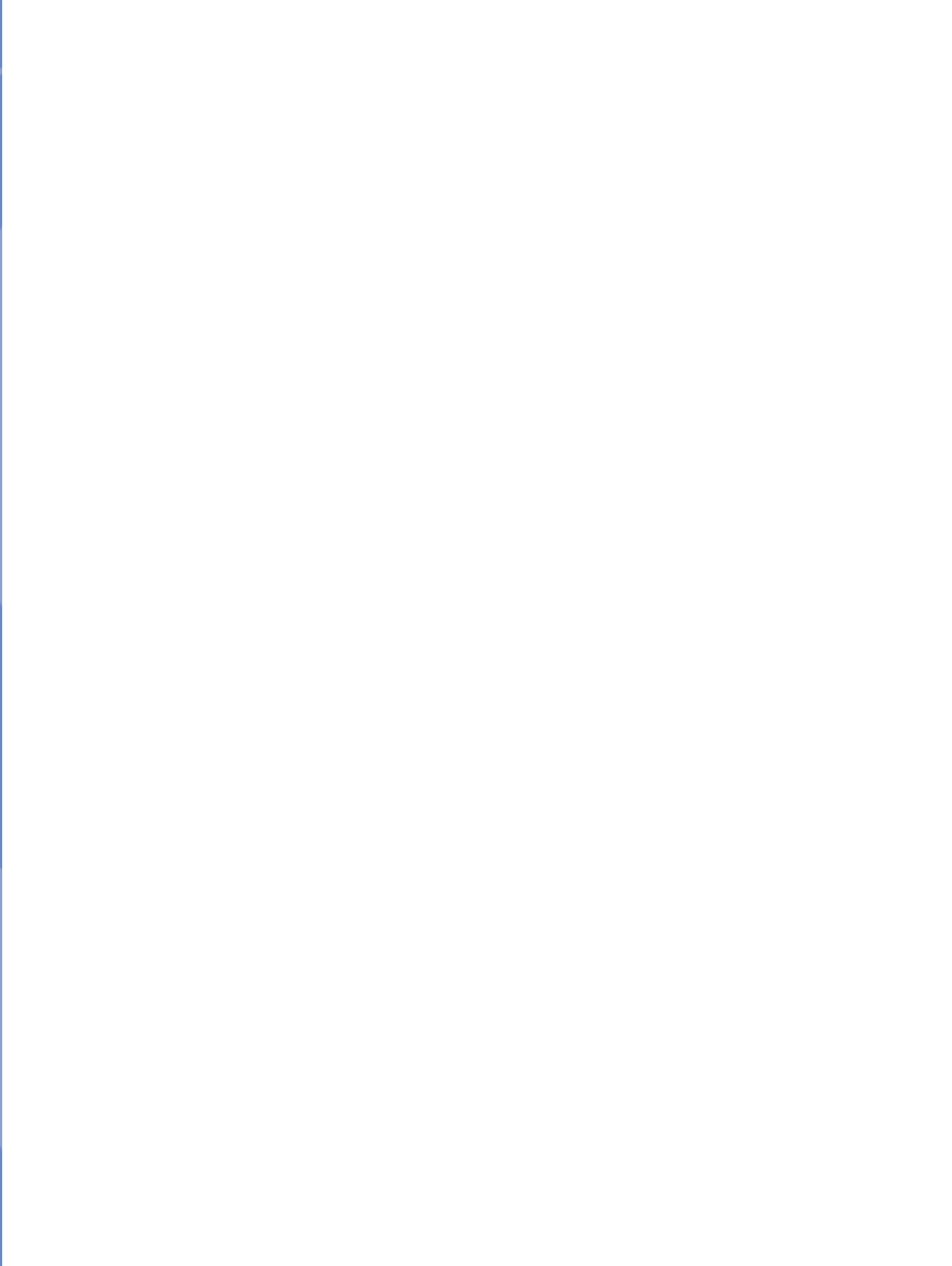
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ANDREW YOUNG SCHOOL
OF POLICY STUDIES

Feeling the Heat? Fear of Failure and Performance

Alberto Chong and Marco Z. Chong*

Abstract

Using a new, objective measure, we study the role of fear of failure in performance and find that it is positively linked with the latter, a finding that tends to contradict the conventional wisdom in both psychology and behavioral economics. We use individual data from the nationally syndicated television show MasterChef for the years 2010 to 2020 and exploit situations in which contestants are on the verge of being dropped from competition. Using ordinary least squares, we show that extreme fear of failure is associated with an increase of two to four positions in the final placement of the competition.

Key Words: Fear of Failure, Creativity, Innovation, MasterChef, Performance

JEL Classification Code: D91, Z13, Z18

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1. Introduction

Fear of failure is a rather powerful human emotion. It can be highly disruptive, erode performance, provoke individuals to self-sabotage themselves to avoid confronting it as well as produce a sense of frustration, helplessness and in particular shame, as it touches on the core of an individual's self-esteem (Conroy, et al., 2002; Tasouides, 2015; American Psychological Association, 2007).¹ Interestingly, fear of failure is rather common and widespread in societies. In the United States, for instance, it has been estimated that around thirty percent of the population is terrified of failure, and it ranks among the worst fears that the population endure in this country.² Similarly, it has been shown that in many countries a significant share of adults indicate that fear of failure prevents them from setting up a business, ranging from 57 percent in India, 54 percent in Spain, 48 percent in the United Kingdom, 41 percent in the United States to 31 percent in Germany, among several other countries (Bosma, et al., 2020)³.

The vast majority of the existing studies take an implicitly negative view on fear of failure and as such, it is mainly seen as a hindrance to reach optimal efficiency. This view has been questioned, as some psychologists have come to believe that fear of failure may also function as a positive force, providing drive to push and persist in the face of challenge and extreme adversity (Conroy, et al., 2002; Martin and Marsh, 2003). Furthermore, some people argue that fear of failure may somehow help unleash dormant creativity and innovativeness in people, which may also help

¹ Fear of failure is defined as the behavioral reaction to the consequences anticipated for failing to achieve objectives set by oneself or others. It is distinct from loss aversion, which refers to the fact that individuals may experience losses asymmetrically more severely than equivalent gains (Kahneman and Tversky, 1979; American Psychological Association, 2007). In its clinical form, fear of failure is called “atychiphobia”, an abnormal, irrational, and persistent fear of failure. (<https://sites.psu.edu/akb13/tag/atychiphobia/>)

² <https://www.latimes.com/health/la-he-scared-20151031-story.html>

³ They measure fear of failure by asking about the extent to which it would prevent adult individuals (aged 18 to 64) from setting up a new business (Bosma, et al., 2020). Interestingly, this is a common and widespread way of measuring fear of failure even when its underlying definition is ambiguous (Cacciotti and Hayton, 2014).

improve performance (Dauten and O'Donnell, 2013; Blankschaen, 2013)⁴. In this research, we take an agnostic view of Fear of Failure with respect to performance. We study whether such link exists and if so, whether these two variables are positively or negatively associated. Will fear of failure emotionally paralyze people from doing things and be linked to failed objectives and targets and ultimately, decreased performance? Or, will Fear of Failure actually push individuals to succeed by, for example, helping unleash creative forces in people and, perhaps, even some calculated risks? These are empirical questions that, to our knowledge, have not been addressed in the past, as for the most part, research on this issue focuses on measurement, diagnostics, and ways of coping.

Fear of failure was first made operational in the form of psychological tests of performance anxiety and emotions (e.g., Atkinson and Litwin, 1960; Burnstein, 1963; Lazarus, 1991). Later, some psychologists developed a widely applied multidimensional test named "Performance Failure Appraisal Inventory", which is a questionnaire that attempts to measure shame and embarrassment, self-esteem, uncertainty in the future, and related characteristics based on the responses provided by the individuals to which it is applied (Conroy, et al., 2002). In fact, a very commonly employed test is also based on subjective responses related to how the individual perceives his or her feelings and reactions under hypothetical situations, including the use of very simple and direct questioning (Cacciotti and Hayton, 2014)⁵. Overall, these and other similar perception-based tests have been used to compare the predominance of fear of failure among different groups, genders, and regions (e.g., Wyrwich, et al., 2016; Nelson, et al., 2013) and are

⁴ In Economics, Compte and Postlewaite (2007) also argue that positive emotions may improve performance, while negative ones may diminish it and theorize that emotions may affect performance into an otherwise standard decision theoretic model to show that in a world where performance depends on emotions, biases in information processing may enhance welfare.

⁵ Sometimes, the underlying definition between subjective measures varies widely depending on the specific study under consideration

sometimes complemented with qualitative methods (i.e., focus groups) that seek to provide a better understanding of the underlying issues that drive fear of failure (e.g., Chua and Bedford, 2016; Hjeltnes, et al., 2015)⁶.

Unlike the standard measures of fear of failure currently employed in the literature, the variable that we employ requires no hypotheticals or subjective assessments. We offer a new, objective proxy that captures fear of failure from situations where individuals are actually close to or in the verge of failing; situations when any such failure is real, significant, and perceived as shameful. This proxy is not based on subjective measures, but on objective situations when individuals are actually exposed to significant fear of failing. The proxy we use comes from, a nationally syndicated reality television program, “MasterChef”, which is watched by millions of people in the United States in which contestants are typically put through tough cooking challenges and where those who do not perform well enough are first put on notice and later on, after being further challenged, may be summarily eliminated from the competition. We believe that those contestants that are on the verge of being eliminated reflect very well situations where fear of failure is maximized. We exploit these type of situations in our data in order to empirically study whether fear of failure is associated with performance.

When using data from MasterChef we find that, on average, individuals that are on the verge of being eliminated, but are able to survive and stay in the competition, end up doing better in the final rankings, all else being equal. In particular, we find that the higher the number of times a contestant is put in this situation, the higher his or her final placement will be among all the contestants. Overall, we find that depending on the measure used, an increase in one unit in our fear of failure index is linked to an increase of between almost one position to four positions in the

⁶ The vast majority of the existing empirical research focuses mostly on entrepreneurship, sports, and education (e.g., Cacciotti and Hayton, 2014; Wach, et al., 2015; Martin and Marsh, 2003).

final competition placement, the latter in situations of extreme fear of failure. We find that our results are very robust. We believe that our findings are rather remarkable, as to our knowledge, this is the first-time that empirical research that shows that being very close to failure is strongly linked with individual overachievement. Fear of failure appears to be a positive influence on performance. Finally, whereas we are unable to fully claim the existence of a causal link between fear of failure and performance, we do believe that in the context of our data it is reasonable to suspect that this might be the case, as the presence of reverse causality seems to be unlikely, as shown below. We acknowledge, however, that we are unable to rule out other potential sources of endogeneity.

The rest of the paper is organized as follows. The next section describes the mechanics of the high-pressure cooking competition mentioned above. Section 3 describes the data that we collected as well as the methods and empirical specifications employed. Section 4 presents our results along with some robustness tests. Finally, Section 5 presents some discussion as well as concluding remarks.

2. MasterChef Competition

We employ data from the first ten years of the well-known and nationally syndicated reality television show “MasterChef”, a high-pressure cooking competition for amateur cooks, that has several characteristics that make it an ideal real-world laboratory to analyze the link between fear of failure and performance. The show first aired in the United States in 2010 featuring the highly regarded British chef Gordon Ramsey as its main host along with two other culinary personalities⁷.

⁷ MasterChef was first aired in 1990 in the United Kingdom and continued for eleven seasons until 2001 at which point it ceased production. However, the show returned in 2005 and was rebranded as MasterChef Goes Large. Following the success of the show, the title was reverted to its original name and a worldwide expansion of the show followed including not only the United States, but such countries as Australia, Canada, Italy, Spain, Ukraine, Vietnam and many more as well as several spin-offs including MasterChef Latino, MasterChef Junior, and others.

Each season, the main goal is to select what the judges believe to be the best non-professional cook of the competition. To do this, challenges the contestants with cooking tests with a very broad array of different ingredients that seek to identify creativity, innovativeness, and all-around cooking prowess under a host of different circumstances, including extreme time constraints, unexpected ingredients, last minute changes, teamwork, and several others.

The stakes are very high. Not only does the winner receive a monetary prize of 250,000 US dollars, but access to many world-renowned chefs along with name recognition and increased networking are priceless. During its first ten seasons, this cooking competition has changed the career path of many of its contestants including many of those that did not end up at the very top⁸. As such, this cooking competition is a way for individuals to find new opportunities and pursue their dreams. Thus, participants place a great deal of importance on doing as best as possible in the show. The competition is broadcast in weekly episodes and the number of contestants has fluctuated between fourteen (season 1) and twenty-four (season 9)⁹. The number of episodes per season has varied throughout the years. The first season consisted of thirteen episodes, only. More recent seasons span up to 25 episodes.

As the home cooks are judged by world class chefs and restaurateurs and watched by television audiences that range in the millions the potential shame and embarrassment of failing

⁸ Being selected among the two dozen or so contestants every season is already an accomplishment, as these individuals are selected from a pre-audition among hundreds of prospective contestants of which around one-hundred travel to Los Angeles and are asked to cook a meal using their own ingredients and serving it to the panel of judges. Once presented with the dish, each judge either accepts or denies participation to the individual applicant. If he or she gets a “yes” vote from at least two of the judges, the individual enters the actual competition and becomes an official contestant of MasterChef.

⁹ All the contestants stay in a hotel in California during the period of shooting, which can take around 2.5 months. The taping sessions are grueling and include tight curfews, no Internet or phone access. Typically, the contestants can only talk to family for about thirty minutes per week, which adds to the pressure. They do have access to cooking books.

under these circumstances is very significant¹⁰. The fact that the judges tend to be rather harsh with the contestants further compounds to this, more so given that these home cooks come with high self-esteem and egos, as they are typically considered as cooking luminaries in their immediate circles of friends, families, coworkers, neighbors or clubs and associations. According to the American Psychological Association (2007) the more important the venue, activity, and stakes at hand, the higher the pressure and fear of failing. Related to this, it should be said that while all the participants are amateur cooks, they are all highly skilled and talented. This is reflected in the very high degree of competition observed in the show. Morgan and Sisak (2016) argue that when there is a high degree of competition, fear of failure may be negatively linked with outcomes, but in situations with limited competition, the same level of fear may yield a positive link with outcomes. Fear of failure may be motivating for highly ambitious individuals that can deal with intense competition but demotivating for the less ambitious. Interestingly, they conclude that it cannot be said whether fear of failure may a handicap to be overcome or a positive trait to be embraced in order to succeed.

The key characteristic that makes this competition useful from the perspective of our research is that participants are constantly faced with highly stressful cooking challenges to the point that if they do not do well enough, they risk the real possibility of being eliminated from competition. In fact, some challenges have been specifically designed to put contestants on the very edge of survival of the competition. These challenges serve as excellent proxies that, in our view, adequately reflect fear of failure, as they capture actual situations in which an individual is put right at the edge of being eliminated from competition in the worst possible way, in front of a

¹⁰ In the United States the number of television viewers is about five million people, on average. In recent years, as expected, the viewership has declined, but it still hovers at around three million viewers in Season 10 (2020), the last season for which we have data (<https://tv.parrotanalytics.com/US/masterchef-us-fox>)

national audience as well as friends and family, which maximizes potential embarrassment and shame and directly impacts on the contestant's self-esteem.

The cooking challenges that competitors must face have varied throughout the years, but one common element is that they seek to rank both the best and worst performers among the contestants. The contestants that end up on top of a cooking challenge are praised by the judges who highlight what they find to be noteworthy in the dish either in terms of flavor, skills, creativity, innovativeness, and presentation. Coming from world-renowned Chefs, such praise provides a strong boost in confidence as well as significant positive reinforcement of those home cooks that do well. It is important to mention that there is significant element of randomness in the cooking challenges. As mentioned above, creativity and innovativeness are particularly prized, which means that the judges will constantly surprise the contestants with new and unusual ingredients and always requiring them to deliver on top notch dishes. In addition, as expected, not all the home cooks are equally proficient in all types of cuisines. A contestant with Mexican heritage will likely be extremely proficient in Mexican cuisine, but likely not particularly good with, say, French cuisine. Similarly, a home cook might be a vegetarian and may be asked to prepare a beef dish; another might be handicapped by allergies to some specific produce, but may be easily required to prepare a dish with such ingredient¹¹. In fact, this type of situations are not unusual, but are, in fact, the norm. This is why cooks that place among the top contestants in one cooking challenge, can easily place at the very bottom in the next cooking challenge. This unpredictability due to the randomness of the cooking requests and challenges is precisely part of the appeal of the competition.

¹¹ Perhaps, an extreme example that helps illustrate the nature of this competition is the case of Christine Hà, a blind contestant who won MasterChef's Season 3 -and who later became a successful restaurateur: <https://www.christineha.com>

A staple cooking test of this competition is the so-called “Mystery Box” challenge. All home cooks are given a box with the same surprise ingredients, which are selected beforehand and are only revealed to the contestants right before the challenge. With these ingredients, the home cooks are expected to create whatever dish they desire in a limited period, often one hour, which then will be presented to the three judges. The judges will select the ones that they consider to be the three best ones¹². Each of these dishes will then be brought before the judges and tasted separately. After this is done, the three judges will briefly deliberate among themselves and decide on a winner for the round. The home cook who produces the best dish will then be given an advantage for the following round not only by having him or her not to participate in the next cooking round (“immunity”), but also by letting him or her sometimes choose the ingredients, dish or cooking style that the rest of participants will have to follow in the next round.

Another competition is the “Team Challenge”, where the contestants are divided into teams of two and are assigned a leader who is chosen from the winners of a previous challenge. The teams are both given the same objective. Normally, this involves serving a menu in a fast and efficient manner. Teams typically decide their own menus or in some cases are assigned a menu that they must reproduce. The teams are given an hour to prepare the menu, after which they will begin service. This generally requires serving hundreds of people. After the service, each customer will vote on which team’s menu they preferred. The team that accumulates the most votes win the challenge¹³.

¹² The judges make rounds around the cooking stations of all the participants, which allows them to ask, observe, taste, and make suggestions on the dish that each contestant is preparing. This also allows them to have a clear idea of which contestants, in the judges’ opinion, prepared the best dishes both in terms of technique and innovativeness.

¹³ Throughout the years analogous cooking challenges have also been used. An example is the so-called Skills Test, which as it names says, home cooks show high-level technical skills by replicating the judges’ technical work (e.g., how to skin a rabbit). While we exclude this test in our empirical tests, as it has not

The other side of the coin is reflected by those challenges that put contestants on the verge of being eliminated from competition. Whereas throughout the years different highly stressful cooking challenges have been employed with the aim of eliminating one or more contestants, the two consistent tests that have been used are the “Elimination Challenge” and the “Pressure Test”. In the former, home cooks will typically have one hour and work in teams of two with the aim at delivering high quality dishes that must impress the judges in terms of innovativeness, skills, and presentation in order to continue in the competition. For instance, they may be asked to create dishes with a random set of ingredients provided to them or they may be asked to reproduce a highly technical dish cooked to perfection. Usually, with the exception of the winner of the “Mystery Box” challenge described above, the rest of home cooks face an elimination test of which the worst performer will be dropped from competition. However, while typically only one individual will be dropped from competition reduces the fear of failure of this challenge is somewhat minimized, as most cooks know that striving to finish at the ‘middle of the pack’ will be good enough to save them¹⁴. As such, they do not need to be ‘truly’ creative or innovative, as doing so might pose unnecessary risks.

On the other hand, the “Pressure Test” is perhaps the most taxing and stressful cooking challenge faced by the contestants, one that also seeks to eliminate the worst performer. In this test, a small number of contestants, usually those that end up being the bottom three worst performers in the previous round, have to face against each other for survival. Again, they have to deliver highly professional, innovative, and creative dishes at Michelin-level standards within a limited amount of time, typically one hour. One of the three contestants will be eliminated from

been consistently applied throughout the ten seasons considered in this research, its inclusion does not change our findings in any significant manner.

¹⁴ In fact, episode after episode, this is a constant comment usually mentioned by contestants.

competition¹⁵. This adds to the pressure of delivering their best possible dish in order to survive, and, unlike in the Elimination Challenge, there is far less incentive of trying to play it safe. Contestants must try to do their best in terms of cooking creativity and innovation in order to impress the judges, as everything is at stake.

Table 1 provides the definitions of all the variables employed in this research.

3. Data and Methodology

We have data from the first ten seasons of the United States version of the television show MasterChef which were broadcast between 2010 and 2020 on national television¹⁶. The data were manually collected directly from each episode that was broadcast during this period. We also used additional resources that are available on the web, which were double-checked for accuracy with the corresponding actual episodes broadcast¹⁷. This data collection process results in 197 observations at the individual level, which cover the full universe of participants of the competition during the ten seasons for which we collected data. Table 2 presents summary statistics of all the variables employed.

We apply ordinary least squares to the following basic specification:

$$Placement_{ij} = \alpha + \mathbf{A}Characteristics_{ij} + \mathbf{\Pi} Reinforcement_{ij} + \mathbf{\Gamma} Fear\ of\ Failure_{ij} + \varepsilon_{ij} \quad (1)$$

where the key dependent variable *Placement* is the final placement obtained by contestant *i* in season *j*. The vector \mathbf{A} corresponds to variables that capture individual characteristics, including rounds participated, age, gender, college completion, and race. The vector $\mathbf{\Pi}$ captures variables that serve as proxies for cooking accomplishments, as described above; in particular we focus on

¹⁵ In rare occasions two contestants are eliminated from competition.

¹⁶ Depending on the season, the number of episodes ran from fourteen (Season 1) to twenty-four (Season 9). In the United States, MasterChef just completed is currently undergoing its 11th season.

¹⁷ Fox Television is the broadcaster of original shows. Today, syndication makes the show widely available in different TV channels as well as in streaming services including Hulu. The web resource employed was the following MasterChef Wiki: <https://masterchef.fandom.com/wiki/Category:Contestant>

(i) the number of times that a contestant wins a Mystery Box challenge, (ii) the number of times that a contestant wins an elimination challenge; the number of times he or she wins a team challenge and (iv) the number of times that a contestant ends up among the top three entries in any particular challenge. Each of these variables provide a strong boost of confidence and praise from judges and as such and in order to simplify we summarize all these measures in a variable named “Positive Reinforcement”, which is just defined as the simple addition of the variables (i) to (iv) above¹⁸.

Our main variables of interest are reflected in vector Γ and includes two key variables that capture cooking challenges in situations when the contestant is on close to elimination that is, when the risk of failing becomes apparent to the contestant. There are two variables that we use as proxies for this. The first is the number of times that a contestant ends up among the bottom three entries in any particular cooking challenge. The second is the number of times that a contestant ends up surviving a Pressure Test¹⁹.

We summarize these two measures in a variable named “Fear of Failure”, which is defined as the simple addition of these two variables. Table 2 shows that this variable ranges from zero to twelve²⁰. In addition, we rename the “Pressure Test” variable as “Extreme Fear of Failure”, as it closely captures being on the absolute verge of elimination from competition. As shown in Table

¹⁸ Throughout the years other type of analogous tests have been used in the competition, but since they have been used sporadically in just one or a very few seasons, they are not included in our research. Very importantly, defining our positive reinforcement proxy differently, for instance, without the elimination challenge variable, does not change our main findings in any significant manner.

¹⁹ Consistent with the description on the text, we decided to exclude the “Elimination Challenge” variable among the fear of failure proxies as frequent times this variable does not really capture “fear of failure” as intended in our research. It should be said that including this variable in this vector does not change our findings in any significant way.

²⁰ Interestingly, the contestant who reached the maximum fear of failure ‘score’ placed eight times among the bottom three home cooks in cooking challenges and survived four pressure tests. This individual managed to finish fourth in the final placements in Season 5.

2, this variable ranges from zero to six. The a priori signs of the corresponding fear of failure coefficients is unclear. On the one hand, we would expect a coefficient that yields a negative sign if fear of failure serves as a positive incentive to individuals. On the other hand, the sign of the coefficient may be positive when being on the verge of failing ends up eroding confidence and self-esteem and thus preventing the contestant from maximizing his or her potential²¹.

In a slight variation of the empirical approach above, we also employ a Probit approach where the dependent variable is a dummy that equals to one if the contestant places among the top three best home cooks in the competition and zero otherwise. This is the variable labeled Top_{ij} below:

$$Top_{ij} = \alpha + \Lambda Characteristics_{ij} + \Pi Reinforcement_{ij} + \Gamma Fear\ of\ Failure_{ij} + \varepsilon_{ij} \quad (2)$$

Finally, α is a constant and ε_{ij} is an error term. It should be emphasized that, unless noted, all the regressions include state fixed effects, season fixed effects as well as clustered standard errors at the season level and robust standard errors. As mentioned above, Table 1 provides the definitions of all the variables.

4. Findings

Our main results are shown in Table 3. We find that fear of failure is very strongly associated with the final placement of contestants in the MasterChef competition. We find that the coefficient of our variable of interest is negative and statistically significant at one percent, as shown in columns 1 and 2. We find that an increase in one unit in our Fear of Failure measure is linked to an increase of 0.84 positions in the final placement ranking, on average. Fear of failure appears to

²¹ As mentioned above, the signs of the coefficients are interpreted in such a way that a negative sign implies a higher placement.

serve as a positive incentive to individuals and as such, appears to provide motivation not only to persist in the face of challenge and adversity, but to improve performance. Interestingly, this finding goes against most, if not all, the existing literature that shows that fear of failure is a negative trait, but sides with the hypothesis of researchers such as Conroy, et al., (2002) and Martin and Marsh (2003) who consider the possibility that fear of failure may act as a positive characteristic. In fact, given the context of our research, our findings are also consistent with the more recent work by Dauten and O'Donnell (2013) and Blankschaen (2013) who argue that fear of failure pushes fuels creativity and innovativeness in individuals.

We find that when using Extreme Fear of Failure as our variable of interest our results hold and the corresponding coefficients remains negative and statistically significant at one percent, as shown in Columns 3 and 4 in the same Table. We find that an increase in one unit in our Extreme Fear of Failure measure is linked to an increase in 2.1 positions in the final ranking, on average. We believe that these findings are rather remarkable for they use a narrower, more extreme definition of Fear of Failure, one that captures “being on the verge of the abyss” rather closely. Interestingly, this is also reflected in the associated final placements of the contestants. As seen above, compared to our weaker Fear of Failure measure, the Extreme Fear of Failure proxy is linked to a larger increase in the final placement, which again, appears to be consistent with the fact that when individuals are absolutely “against the wall” they will tend to overperform.

It should be mentioned two other variables that appear to be relevant to final placement. One is having college education and another one is positive reinforcement. This latter variable is particularly interesting, as it provides some evidence that confidence builders may be relevant in terms of performance, something that while widely accepted, has been difficult to test, as the existence evidence is mostly circumscribed to sports (Ahammer, et al., 2019). In particular, Table

3 shows that an increase in one unit in our Positive Reinforcement measure leads to an increase of between 1.1 and 1.2 positions in the final placement in the competition, on average.

In addition, in Table 4 we extend the basic specifications of Table 3 and include a broad number of interactions with individuals' characteristics including race, gender, college and age. We find that interacting college and age with our fear of failure variables do have a bearing on final placement²².

As Column 2 shows, an increase in one unit in our fear of failure measures is associated with an increase of 1.3 positions in the final placement. In addition, Column 4 shows that an increase in one unit in our Extreme Fear of Failure measure leads to an overall increase in four positions in the final placement of the competition²³. It should be emphasized that our findings are very robust to changes in specification and are substantially stronger when using the extreme definition of fear of failure²⁴. Finally, our findings using a Probit approach along the lines of specification (2) are shown in Table 5. We find analogous results to the ones above when instead of final individual placement we use a dummy variable that equals to one if the contestant ended up among the three top home cooks of the competition and zero otherwise. In particular, Column 6 in Table 5 shows that an increase in one percent in our Extreme Fear of Failure measure is associated with an increase of about 9.1 percent in the probability of ascending positions in the final placement.

²² Gender and race variables are either not statistically significant at conventional levels when interacted with our fear of failure measures or they are not robust to changes in specification.

²³ As shown in Column 1 and Column 2 in Table 4, an increase in one unit in our Positive Reinforcement measure is linked to an increase that ranges between 0.6 and 1.2 positions in the final placement of the competition, respectively. However, the variable loses statistical significance in our most taxing specification, shown in Column 4.

²⁴ We test whether our fear of failure measures are robust to the inclusion of additional variables to the benchmark specification by augmenting it with a pool of three ancillary variables, which are introduced systematically including all possible combinations in the regressions. We find that our fear of failure measure is robust in the most taxing specification (Column 4, Table 4) and that the extreme fear of failure measure is robust to systematic changes in specification at conventional levels, as the weighted cumulative distribution function at zero is statistically significant at five percent or higher (Sala-i-Martin, 1997).

Finally, whereas reverse causality tends to be a somewhat common problem when studying issues related to self-confidence and performance (Heckman et al., 2006) an advantage of using these data is that the two key drivers of performance in this context are creativity and innovativeness, as these two are explicitly mentioned as crucial judgment characteristics, particularly in the Extreme Fear of Failure case. Furthermore, given the fact that there are very strict time constraints in order to deliver the requested dishes during the cooking challenges, it is difficult to consider increased effort, more attention to detail, becoming more methodical or taking more deliberate steps, as key elements for any improvement in performance, as they all consume significant amounts of time. On the other hand, while it is reasonable that Fear of Failure may somehow unleash an individual's creativity and innovativeness and thus, contribute to an improvement in performance, it is less reasonable to believe that more creative or innovative types are also consistently more (or less) fearful of failing, on average. However, whereas the presence of reverse causality may not be an issue in our findings, we admit that in theory there may exist unobservable variables that, as unlikely as they may be, may somehow drive both, fear of failure and innovativeness simultaneously and thus, may pose as a potential source of endogeneity.

5. Concluding Remarks

In this paper we offer an objective proxy that helps measure whether Fear of Failure is associated with increases or decreases in performance. We use newly collected individual-level data from a national syndicated cooking television show for the period 2010 to 2020 and find that Fear of Failure and in particular, Extreme Fear of Failure is positively associated with performance, as measured by final placement in the competition. We find that our most extreme measure is associated with an increase of two to four positions in the final placement in the competition.

Our findings appear to contradict the conventional wisdom, typically focused mainly on sports, entrepreneurship, and education. However, as suggestive as they are, we do not venture to call our findings causal, as in theory we cannot rule out the presence of an unobservable driving our key variable of interest and the dependent variable simultaneously. Still, we hope that our findings may provoke further discussion and research on this understudied issue, as the policy implications can be rather important. For instance, in Education, our findings seem to reconcile the long unresolved debate on whether a “Tiger Mom” approach, which is more predominant in Asia may be preferable to a more nurturing approach, more common in North America. Our findings provide a common theme to the question of what approach is best for kids. According to our findings, fear of disappointing the parents, fear of failing them may be a driver of educational performance, perhaps more so than either a tough or nurturing educational approach. Analogous implications may be possible to find in several other disciplines including political economy, labor, or health. Perhaps, our research can help view decision making in a different light and help understand seemingly unconventional choices. Without a doubt further research on this topic is needed.

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Table 1
Definitions of Variables

Age	Age of the contestant
College	Dummy that equals to one if the individual attended college, zero otherwise.
Female	Dummy that equals to one if the contestant is female, zero otherwise
Race	Set of dummy variables that equal to one if the contestant is African American, Asian American or Latino, and zero otherwise.
Top Three Placement	Dummy variable that equals to one if the contestant ended up among the three top home cooks of the competition, zero otherwise
Rounds Participated	Number of television episodes in which each contestant participated
Final Placement	Final position in the competition in a particular season. The higher the final placement, the worse that the contestant did.
Mystery Box Won	Dummy variable that equals to one if the contestant won a Mystery Box challenge
Elimination Tests Won	Dummy variable that equals to one if the contestant won an Elimination test challenge
Team Challenge Won	Dummy variable that equals to one if the contestant won a Team challenge
Top Entries	Total number of cooking challenges that a contestant placed among the top three.
Bottom Entries	Total number of cooking challenges that a contestant placed among the bottom three.
Positive Reinforcement	Total number of times that the contestant won a Mystery Box challenge plus an Elimination Test challenge plus a Team Challenge plus the number of times that the contestant ended up among the top three entries of any challenge.
Fear of Failure	Number of times that the contestant placed among the bottom three plus the number of times that the individual survived a pressure test.
Extreme Fear of Failure	Total number of times that the individual survived a pressure test.

Table 2
Summary Statistics

Variables	Observations	Mean	Standard Error	Minimum	Maximum
Age	197	31.23	8.450	18	63
College	197	0.462	0.500	0	1
Female	197	0.467	0.500	0	1
Caucasian	197	0.584	0.494	0	1
Asian American	197	0.122	0.328	0	1
African American	197	0.178	0.383	0	1
Hispanic	197	0.122	0.328	0	1
Top Three Placement	197	0.152	0.360	0	1
Final Placement	197	10.49	5.937	1	23
Rounds Participated	197	12.411	2.523	1	24
Mystery Box	197	0.421	0.707	0	3
Elimination Tests Won	197	0.563	1.026	0	9
Team Challenge Won	197	1.883	1.645	0	8
Extreme Fear of Failure	197	1.117	1.196	0	6
Top Entries	197	0.909	1.065	0	5
Bottom Entries	197	1.848	1.438	0	8
Positive Reinforcement	197	3.777	3.372	0	16
Fear of Failure	197	2.964	2.241	0	12

Source: Data collected by authors from MasterChef USA episodes between 2010 and 2020 along with complementary information from MasterChef Wiki

Table 3
Fear of Failure
Dependent Variable: Final Placement
Ordinary Least Squares

	(1)	(2)	(3)	(4)
Age	0.015 (0.021)	0.015 (0.018)	0.036 (0.020)	0.036 (0.020)
College	-0.733* (0.398)	-0.733** (0.278)	-0.575* (0.335)	-0.575** (0.221)
Fear of failure	-0.884*** (0.106)	-0.884*** (0.104)		
Extreme Fear of Failure			-2.068*** (0.178)	-2.068*** (0.186)
Positive Reinforcement	-1.229*** (0.075)	-1.229*** (0.094)	-1.089*** (0.071)	-1.089*** (0.087)
Constant	12.569*** (0.999)	12.569*** (0.803)	10.996*** (0.860)	10.996*** (0.842)
Observations	197	197	197	197
R-squared	0.832	0.832	0.869	0.869
Season Fixed Effects	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes
Clusters Season level	No	Yes	No	Yes

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Standard errors in parentheses. All regressions include the additional individual-level controls: Rounds participated, Age, College, Asian American, African American, Hispanic and Female. Neither of these variables is statistically significant in any specification. Please, notice that the scale is inverted, a negative coefficient indicates a higher final placement. Data collected by authors from MasterChef USA episodes between 2010 and 2020 along with complementary information from MasterChef Wiki.

Table 4
 Fear of Failure and Interactions
 Dependent Variable: Final Placement
 Ordinary Least Squares

	(1)	(2)	(3)	(4)
Age	0.034 (0.033)	0.046 (0.032)	0.017 (0.026)	0.039 (0.029)
College	-1.219** (0.513)	-0.506 (0.664)	-0.433 (0.249)	0.384 (0.272)
Fear of Failure	-0.769 (0.448)	-1.266*** (0.442)		
Age*Fear of Failure	-0.006 (0.012)	0.007 (0.011)		
College*Fear of Failure	0.217 (0.210)	0.332 (0.211)		
Extreme Fear of Failure			-2.712*** (0.476)	-3.930*** (0.529)
Age*Extreme Fear of Failure			0.020 (0.012)	0.045** (0.015)
College*Extreme Fear of Failure			-0.122 (0.201)	0.150 (0.291)
Positive Reinforcement	-1.212*** (0.090)	-0.564* (0.305)	-1.090*** (0.082)	-0.304 (0.297)
Age*Positive Reinforcement		-0.016** (0.007)		-0.016* (0.008)
College*Positive Reinforcement		-0.259* (0.138)		-0.281*** (0.079)
Constant	12.060*** (1.239)	11.241*** (1.378)	11.616*** (1.086)	10.093*** (1.115)
Observations	197	197	197	197
R-squared	0.840	0.852	0.872	0.884
Season Fixed Effects	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes
Cluster Season level	Yes	Yes	Yes	Yes
Fear of Failure Interactions	Yes	Yes	Yes	Yes
Positive Reinforcement Interactions	No	Yes	No	Yes

*** p < 0.01, ** p < 0.05, *p < 0.1. Standard errors in parentheses. All regressions include the additional individual-level controls: Rounds participated, Asian, Black, Hispanic; Female. Gender and race variables are either not statistically significant or not robust to changes in specification. These variables are interacted with our fear of failure measures and/or our positive reinforcement measure as indicated in the Table. Please, notice that the scale is inverted, a negative coefficient indicates a higher placement. Data collected by authors from MasterChef USA episodes between 2010 and 2020 along with complementary information from MasterChef Wiki.

Table 5
 Dependent Variable: Top Three Placement
 Marginal Effects
 Probit Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.001 (0.005)	-0.010** (0.005)	-0.000 (0.001)	-0.017*** (0.004)	0.005** (0.002)	-0.013*** (0.004)
College	0.066 (0.057)	0.175*** (0.062)	0.051** (0.025)	0.149** (0.063)	0.068** (0.029)	0.220*** (0.040)
Fear of Failure	0.009 (0.039)	0.021 (0.025)				
Age*Fear of Failure	0.000 (0.001)	-0.000 (0.001)				
College*Fear of Failure	-0.010 (0.013)	-0.006 (0.012)				
Extreme Fear of Failure			0.067*** (0.007)	0.069*** (0.012)	0.110** (0.045)	0.135*** (0.028)
Age*Extreme Fear of Failure					-0.002 (0.001)	-0.001*** (0.000)
College*Extreme Fear of Failure					-0.014 (0.018)	-0.043*** (0.011)
Positive Reinforcement	0.047*** (0.008)	-0.014 (0.027)	0.049*** (0.004)	-0.034 (0.022)	0.045*** (0.006)	-0.044** (0.022)
Age*Positive Reinforcement		0.002** (0.001)		0.002*** (0.000)		0.002*** (0.001)
College*Pos Reinforcement		-0.021*** (0.004)		-0.015** (0.007)		-0.012** (0.005)
Observations	197	197	197	197	197	197
Season FE	Yes	Yes	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Season level	Yes	Yes	Yes	Yes	Yes	Yes
Full Fear of Failure Interactions	Yes	Yes	No	No	Yes	Yes
Full Pos Reinforcement Interactions	No	Yes	No	Yes	No	Yes

*** p < 0.01, ** p < 0.05, *p < 0.1. Standard errors in parentheses. All regressions include the additional individual-level controls: Rounds participated, Asian, Black, Hispanic; Female. Gender and race variables are either not statistically significant or not robust to changes in specification. These variables are interacted with our fear of failure measures and/or our positive reinforcement measure as indicated in the Table. Please, notice that the scale is inverted, a negative coefficient indicates a higher placement. Data collected by authors from MasterChef USA episodes between 2010 and 2020 along with complementary information from MasterChef Wiki.