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"It ain't what you don't know that gets you into trouble.
It's what you know for sure that just ain't so."
Mark Twain

Chapter 1

Introduction

The persistent lack of diversity in Germany's executive suites is undeniable. Confirming statistics and studies have been cited repeatedly and differ only in their framing. Some studies cast blame, some are tinged with perceptible anger, some sound like an 'obligatory' mantra increasingly causing resignation, and many make attempts at explanation. In 2021, the percentage of women CEOs in Fortune 500 companies reached a record high—at 8.1%. In Germany, there was only one female CEO in the DAX 30 until 2021—for a mere six months. And diversity is about far more than gender alone. The resumés of board members from the largest 30 listed companies in Germany reveal even greater homogeneity in numerous other dimensions. German board members are on average 54 years old, 98% come from West Germany, and 60% have studied economics (Odgers Berndtson, 2021), not to mention diversity in terms of disabilities, socio-economic background, or cultural origin.

At the same time, promises of diverse teams are widely discussed. In addition to an increased variety of perspectives, greater creativity, and thus higher quality of team performance, human resource executives note the main advantages of a diverse workforce are better utilization of talent, enhanced marketplace understanding, and increased breadth of understanding in leadership positions (Page, 2008; Robinson & Dechant, 1997). The raw numbers also robustly support a compelling business case for diverse teams: an analysis of >1,000 companies across 15 countries reveals that teams with higher gender and ethnic diversity display a significantly higher likelihood of financial outperformance (McKinsey & Company, 2020)

Nonetheless, diverse teams are not a panacea or a magic bullet. In reality, there are many associated risks (see Mannix & Neale, 2005 for an overview), especially regarding

communication difficulties and increased potential for conflicts, leading to lower team-member satisfaction (Jackson, 2003; Jehn et al., 1999; Riordan & Shore, 1997). However, the potential short-term costs and risks of diverse teams should under no circumstances detract from the long-term potential that lies fallow if not all social groups are factored into the allocation of jobs. Thus, the enormous need for research on this topic appears all the more urgent.

"Were They Pushed or Did They Jump?" asks Diego Gambetta in his eponymous book, thereby capturing the two main underlying reasons for lack of diversity in many professional areas. On the one hand, 'push' factors address external constraints and structural hurdles that manifest themselves in phenomena such as the much-cited glass ceiling or the 'Thomas-Kreislauf' effect. Reasons for these range from conscious discrimination to unconscious biases, such as the affinity bias, according to which people value interpersonal commonalities higher than objective performance criteria. 'Jump' or 'pull' factors refer to the personal choices and behaviors of individual decision-makers. With regard to gender diversity, these include the extensively documented gender differences in competitiveness (Gneezy et al., 2003; Niederle & Vesterlund, 2007), self-confidence (Carlin et al., 2018), and attitudes towards risk or altruism and cooperation (see, e.g., Kray & Thompson, 2004).

This dissertation focuses on the 'pull': the personal choices and behaviors of individual decision-makers and especially systematic differences in subgroup preferences and behaviors that result in disparity. Explanatory approaches for this can be found in rational choice theory, in whose core assumptions this dissertation is embedded. Differences in socialization or cultural expectations among subgroups lead to differing subjective perceptions of the costs and benefits of alternative options (Boudon, 1974; R. Breen & Goldthorpe, 1997). Thus, regardless of people's abilities or prior performances, affiliation with certain social subgroups lead to different assessments of alternative choices. The resulting differences in decision-making patterns shape the educational and career paths of these subgroups, leading directly to the absence of variety in most professional areas.

Exploring these decision patterns and especially subgroups who differ systematically in their perceptions of decision parameters is key to understanding the lack of diversity in leadership roles. The overarching goal of this dissertation is to present and discuss significant

new research on the choices and behaviors of selective samples in competitive situations. What differences in preferences remain when individuals self-select into a competitive context? How do their choices differ when ability and prior performances are controlled for? Answering these questions will help to shed light on the influence of the individual "pull" on the lack of diversity in leadership positions and thus helps to sharpen respective measures.

1.1. Approach and Contribution

Previous research studies on behavioral patterns have either been purely theoretical (e.g., R. Breen & Goldthorpe, 1997), or they examined the behavior in laboratory settings of small samples of students who encounter artificial settings and tasks for the first time (e.g., Niederle & Vesterlund, 2007), or they investigated macro-level phenomena among the general population only (e.g., Barone et al., 2018). However, for this dissertation the research is based on four natural experiments with selective but large samples of high-ability students and marathon runners.

In natural experiments—in contrast to randomized experiments—the observed subjects are not exposed to artificially designed manipulations or controls. Instead, all conditions are determined by real-world circumstances. Pioneering first contributions in the early 1990s as an innovative method of empirical research, Joshua Angrist, Guido Imbens, and David Card received the Nobel Prize in Economic Sciences in 2021 for their methodological work on causal relationships and labor economics using natural experiments (The Noble Foundation, 2021). Their landmark work saw Angrist, Imbens, and Card develop ways in which causation can be inferred from observational data in real-world, natural experiments in the areas of education, the labor market, and immigration.

The aim of this dissertation is to use natural experiments to expand on existing research on behavior in competitive settings. Our approach offers several advantages and allows this dissertation to contribute to different aspects of current (mostly theoretical and laboratory) research.

First, the use of real-world circumstances enables the researcher to make inferences regarding causal relationships. In studies of gender differences in particular, leading researchers

have highlighted the lack of correlation between behavioral traits and actual behavior outside the laboratory (Niederle, 2016). Pioneer studies have presented ground-breaking evidence, for example, by assigning artificial tasks to student groups and designing tournament experiments to shed light on specific behavioral traits (e.g., Gneezy et al., 2003; Niederle & Vesterlund, 2007; Buser, 2016). The projects undertaken for this dissertation will build and expand on these results. The study will explore behavioral traits outside controlled conditions and without the influence of, for example, artificial incentives or any other effects of controlled experiment settings. For the purposes of this study, the nature of natural experiments creates opportunities to gain valuable insights into the external validity and relevance of behavioral traits in various real-life settings.

Second, in contrast to samples in controlled laboratory experiments and clinical trials, the examined subpopulation in natural experiments has self-selected to enter the environment and has chosen freely to participate in the intervention. In this study, we observe the behavior of individuals in highly competitive environments in both education and sports. The self-selection mechanism allows the researcher to identify any potential implications for other individuals who pursue extraordinary careers. Therefore, this dissertation can make an important contribution to the exploration of the choices made and the behaviors displayed in a professional context. This exploration can suggest explanations for the current lack of diversity in executive positions and measures to address this issue.

Third, the selective samples in natural experiments offer the opportunity for in-depth observation of behavioral patterns that occur regardless of prior performances and ability, factors that are described by Boudon as ‘secondary effects’ (Boudon, 1974). Due to lack of detailed data, previous research has often limited their analyses of differences in educational outcomes to differing starting conditions, such as differences in access to socio-cultural resources (e.g. Crul et al., 2012). In particular in Part I of this dissertation, where we analyze the behavior of high-ability students, the natural experiments we conduct allow us to analyze a homogeneous group in terms of cognitive abilities, commitment, and aspirations. The results allow for the identification of preferences and behaviors under real-life conditions regardless of the cognitive resources of individuals, thus helping to explain residual differences in choice and

behavior and possible explanations for the lack of diversity in management positions. Finally, the dissertation aims to contribute to the formulation of measures that promote diversity. In the fourth and final project, we build on previous research regarding the use of feedback as a means to reduce the gender gap in competitiveness. Using natural experiments in our sample with competitive individuals allows us to test the validity of feedback as a measure to improve gender diversity in a competitive workplace and to provide differentiated and concrete recommendations for the implementation of feedback in a professional context.

1.2. Outline

The dissertation is divided into two parts of two projects each. These two parts are framed by an overarching theoretical foundation underpinning the thesis, presented in the opening chapter and a comprehensive conclusion and outlook at the end of the dissertation.

Part I – Educational Decision-Making. The focus of Part I is on educational decision-making with a particular focus on the behaviors and choices of high-ability students. Here, we examine the CVs of an extensive dataset of 128,000 students in a nationwide scholarship program.

- ***Project 1:*** "When an exchange semester is no longer enough. Why and how the Bologna-reforms changed the behavior of high-ability students"
- ***Project 2:*** "Understanding the impact of gender and migration on high-ability students' behavior: Exploring behavioral differences in business, law, and engineering students throughout their academic careers"

Part II – Choices in Competitive Situations in Sports. In Part II, a large sample of marathon runners is used to examine the behaviors of individuals in a competitive sports context. The analysis features a particular focus on gender differences.

- ***Project 3:*** "Young, Male, Experienced: What factors drive overconfidence? Empirical evidence from marathon running"
- ***Project 4:*** "Are women more resilient? Gender differences in the reaction to negative feedback"

1.3. Overview of Studies Submitted as Parts of this Dissertation

Title	**When an exchange semester is no longer enough. Why and how the Bologna-reforms changed the behavior of high-ability students**
Authors	Fabian Lensing, Bernd Frick & Lisa Beck-Werz
Position in this Dissertation	**Part I, Chapter 3**
Contribution to joint projects	All co-authors equally contributed to the completion of the project.
Scientific dissemination	• *Working Paper Dissertation Series*, Faculty of Business Administration and Economics, University of Paderborn *Further dissemination ongoing*

Title	**Understanding the impact of gender and migration on high-ability students' behavior: Exploring behavioral differences in business, law, and engineering students throughout their academic careers**
Authors	Lisa Beck-Werz, Bernd Frick, Thomas Fritz & Fabian Lensing
Position in this Dissertation	**Part I, Chapter 4**
Contribution to joint projects	All co-authors equally contributed to the completion of the project.
Scientific dissemination	• *Working Paper Dissertation Series*, Faculty of Business Administration and Economics, University of Paderborn *Currently under Review at "Research in Higher Education" (since 06/2022)*

Title	**Young, Male, Experienced: What factors drive overconfidence? Empirical evidence from marathon running**
Author	Lisa Beck-Werz
Position in this Dissertation	**Part II, Chapter 5**
Contribution to joint projects	Single-authored project
Scientific dissemination	• Poster Presentation at Annual Conference of North American Society for the Psychology of Sport and Physcial Activity (NASPSPA), June 2021 • Presentation at Annual Meeting of the German Association of Sport Economics and Sport Management, April 2021 • *Working Paper Dissertation Series,* Faculty of Business Administration and Economics, University of Paderborn *Currently under Review at the Journal of Sport Psychology (since 07/2022)*

Title	**Are women more resilient? Gender differences in the reaction to negative feedback**
Authors	Lisa Beck-Werz & Thomas Fritz
Position in this Dissertation	**Part II, Chapter 6**
Contribution to joint projects	Thomas Fritz and I equally contributed to the project.
Scientific dissemination	• Poster Presentation at Annual Conference of North American Society for the Psychology of Sport and Physcial Activity (NASPSPA), June 2021 • Presentation at Annual Meeting of the German Association of Sport Economics and Sport Management, April 2021 • *Working Paper Dissertation Series,* Faculty of Business Administration and Economics, University of Paderborn *Currently under Review at Sport Exercise and Performance Psychology (since 07/2022)*

Chapter 2

Theoretical Background

Rational choice theory (RCT) (Boudon, 1974; R. Breen & Goldthorpe, 1997) and habitus theory (Bourdieu, 1977; Bourdieu & Passeron, 1977) have established themselves as key theories for explaining and describing behavioral patterns. While habitus theory explains behavior as the result of lasting cognitive and normative dispositions acquired through past experience and is used predominantly in the sociological field, RCT serves as a core concept in (behavioral) economic research and provides the overarching framework for this dissertation.

The general concept of RCT builds on the assumption that every decision-maker undertakes a cost-benefit calculation before making any decision or engaging in any action. For this purpose, it is assumed that, first, all possible options are determined and then ranked by means of their behavioral opportunities and constraints (i.e., 'benefits and costs') in order to select the alternative that maximizes expected utility. Thereby, it is implied that all behavior is goal-directed and that the goals of the actors are derived from their preferences. RCT was first formally introduced in 1944 by John von Neumann and Oskar Morgenstern, who published an axiomatic formalism of expected utility theory in their *Theory of games and economic behavior*. However, it was soon criticized in applied disciplines, especially by representatives of behavioral economics, sociology, and psychology. The strongly reductionist assumptions and concept of an idealized decision maker with perfect knowledge were at best attributed normative qualities, but "not as a description of behavior of real people" (Tversky & Kahneman, 1989, p. 251).

In recent decades, more and more 'wide' or 'thick' versions of RCT models have been developed. These conceptions include, inter alia, assumptions about the decision makers' personal values and beliefs, accept altruism as a possible human motivation, or the possibility that beliefs may be false and information may be incomplete (Goldthorpe, 1998; Opp, 1999). John Goldthorpe, who, together with Richard Breen, introduced one of the most influential models for applying RCT to explain class-related educational inequalities, deliberately distances himself from a so-called 'perfect' rationality: "I make no assumptions that actors are

always entirely clear about their goals, are aware of the optimal means of pursuing them, or in the end do always follow the course of action that they know to be rational" (Goldthorpe, 1996, p. 485). Rather, they see RCT as an approach to explain macro-level phenomena such as a lack of diversity or inequalities in educational outcomes by breaking them down to micro-level processes and gaining an understanding of individual decision models (R. Breen et al., 2014). These individual decision models build on the rationale that the evaluation of the underlying decision parameters is governed by the subjective perception and experience of the respective decision maker. In line with value-expectancy theory (see e.g. Eagly & Chaiken, 1993), the assumption of subjectivity is applied to all preceding considerations that underlie the general cost-benefit analysis. Thus three decision parameters are fundamental to any behavioral alternative: the *perceived cost* of an option, the *subjective likelihood of success*, and the *expected benefit* per outcome.

Figure 1. *Underlying decision parameters (own illustration derived from Breen & Goldthorpe, 1997)*

The role of subjective perceptions in the decision-making process is the starting point for numerous studies that, using RCT, aim to explain macro-level phenomena such as social stratification and lack of diversity (see, e.g., Boudon, 1974; R. Breen & Goldthorpe, 1997; Goldthorpe, 1996). In such cases it is assumed that besides individual and/or random variation due to, for example, personal values, beliefs, or experiences, there are also systematic patterns. Any affiliation to any specific subgroup, but especially factors such as social class, gender, or migration background, due to differences in socialization or cultural expectations, lead to differences in the evaluations of decision parameters and consequently to systematic differences

in choices and behavior. The overarching aim of this dissertation is to provide further research on the resulting behavioral differences that arise systematically among different subgroups.

In each of the four projects of the dissertation, we gain information on one to two of the underlying decision parameters (see Figure 2). Part I of the dissertation (projects 1+2) examines rational choice specifically in the educational setting, while Part II (projects 3+4) addresses decisions and behavior in a competitive sport context.

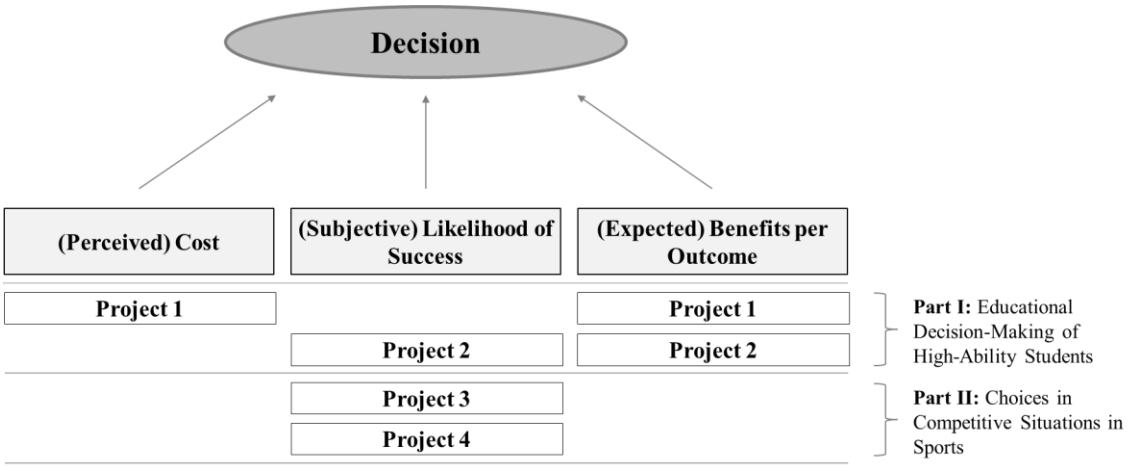

Figure 2. *Conceptual Framework of this dissertation (own illustration derived from Breen & Goldthorpe, 1997)*

2.1. Educational Decision Making

Educational careers are nothing other than a series of binary choices (Boudon, 1974). These educational choices are the prerequisite for and backbone of any subsequent career. Therefore, it is not sufficient to simply compare the mere educational outcomes in order to understand educational disparities. Rather, the inevitable core of any corresponding research is a step-by-step analysis of the individual educational transitions and educational decision making.

In 1974, Boudon published *Education, Opportunity and Social Inequality*, a groundbreaking work in which he systematically explained social stratification in educational outcomes with the help of basic RCT considerations. Boudon differentiated between ‘primary’ and ‘secondary’ effects, with primary effects comprising differences in scholastic performance

(e.g., grades) while secondary effects describe differences in educational choices that remain after controlling for previous scholastic performance.

Based on Boudon's framework, Richard Breen and John Goldthorpe developed a more concrete approach by formulating explicit assumptions and deriving testable implications in a mathematical model. Since its publication in 1997, the Breen-Goldthorpe Model (BG-Model) has been widely applied and extensively empirically tested across different national and constitutional contexts, and is now considered a fundamental starting point for research in educational choices (see, e.g., *Germany*: Stocké, 2007; *Netherlands*: van de Werfhorst & Hofstede, 2007; *Israel*: Gabay-Egozi et al., 2010; *Denmark*: R. Breen et al., 2014).

In their basic model, Breen and Goldthorpe describe the branching points in every career path as the decision either to remain in the educational path and pursue the next higher degree or to leave the educational path and enter the labor market. The evaluation of the underlying cost, likelihood of success, and respective attributed benefit is expressed through differing perceptions of each of three social classes: a service class, a working class, and an underclass (R. Breen & Goldthorpe, 1997).

Following Boudon, in the BG model it is assumed that educational abilities are equally distributed among the different classes (‘primary effect’). Thus, the focus of the BG model is on the explanation of performance-independent differences in educational decisions (‘secondary effect’) for which Breen and Goldthorpe present three possible mechanisms based on their mathematical formulation. As a first mechanism they describe *relative risk aversion* as the assumption that all social classes share an underlying priority: minimizing the risk of loss and avoiding downward mobility. Echoing loss-aversion theory (Kahneman & Tversky, 1979), the mechanism describes minimizing the risk of social demotion or, put positively, the unconditional conservation of social class. In this way, affiliation to different social classes automatically leads to different reference points and to a relative evaluation of potential loss. Second, differences *in expectations of success* lead to divergent educational choices. These could be due to differences in the subjective perception of scholastic abilities in the different classes or to different experiences in the family environment. Finally, classes differ in the *resources* available to them.

The first two projects of this dissertation address the educational choices of high-ability students. For this purpose, we analyzed curricula vitae from 128,000 scholarship holders of a Germany-wide scholarship program over a period of 20 years. The analysis of this selective sample is particularly valuable for two reasons: First, the selective admission process to the scholarship guarantees a homogeneous distribution of scholastic abilities and commitment. All scholars have shown through excellent prior performance that they not only possess outstanding cognitive abilities but also an above-average determination to excel. This allows an undistorted view of the preference and decision patterns that emerge independently of prior performance ('secondary effects'). Second, the sample of outstanding students represents the pool for potential future leaders, whose lack of diversity constitutes a major focus of this dissertation.

In the following, I will provide a brief overview of the first two projects before moving on to the theoretical embedding of Part II, "Choices in Competitive Situations in Sport," in Section 2.2.

2.1.1. Project 1: *"When an exchange semester is no longer enough. Why and how the Bologna-reforms changed the behavior of high-ability students"*

In the first project, we analyze the behavioral patterns of high-ability students by assessing their behavioral responses to a massive change in the institutional framework. For this, we study the effect of the Bologna reforms, a pan-European initiative of the early 2000s that aimed to improve the quality of higher education in Europe. One of the goals was to promote the international mobility of students (European Commission, 2021). The numerous measures and standardizations that had been undertaken within the Bologna reforms led to an tremendous change in the institutional framework and constraints for students.

In addition to providing valuable descriptive evidence on the adaptation of students' behavior in response to the reform, the external shock reveals the crucial decision-making parameters of high-ability students. On the one hand, the Bologna reforms affected the *(perceived) cost* of studying abroad by reducing complexity and providing incentives. In addition—and especially for high-ability students—the reform affected the *perceived benefits* of an exchange semester. The rationale for this can be found in signaling theory, according to

which employers use the level of accumulated educational credentials as a 'signal' for the productivity of a potential employee (Spence, 1973). High-ability individuals benefit from a relative cost advantage compared to low-ability individuals when producing a credible signal of superior ability. As a result of the Bologna reforms, the cost advantage and thus the value of the signal of an exchange semester decreased and with it the *perceived benefits* for high-ability students.

Hence, in our study we investigate the particular impact of the Bologna reforms on the international mobility of German high-ability students. We find that following the Bologna reforms, high-ability students extended their stays and completed degrees abroad (instead of only doing exchange semesters). No such changes in behavior are to be observed in the overall student population. We conclude that completing a degree abroad is the new labor market signal for "international qualification" among high-ability students.

2.1.2. Project 2: *Understanding the impact of gender and migration on high-ability students' behavior: Exploring behavioral differences in business, law, and engineering students throughout their academic careers*"

The second project focuses on the systematic gender- and migration-related differences in behavior that occur in the sample of high-ability students. The influence of gender and migration background on the preferences of individuals has already been intensively researched in the general population. Conclusions from a large body of literature robustly indicate that, compared with men, women are less competitive (Gneezy et al., 2003; Niederle & Vesterlund, 2007), less self-confident (Carlin et al., 2018), risk-averse and strive for altruism, collaboration, and relationships, rather than competition and negotiation (Croson & Gneezy, 2009; Kray & Thompson, 2004). People with a migration background, regardless of their socio-economic background, show particularly high (educational) aspirations (see Salikutluk, 2016, for an overview) an increased demand for a 'better life' and a desire not only for avoiding downward mobility but for social advancement (Crul et al., 2014; Vallet, 2007).

These differences in preferences and perspectives shape how individuals subjectively evaluate the underlying decision parameters, in particular the *subjective likelihood of success*

and *expected benefits*. Consequently, such differences have a significant impact on crucial choices along the career path. For instance, Gabay-Egozi et al. (2015) found that, in particular, considerations about a career's usefulness and expectations about possible failures influence the subjective choices of women and men. A further widely-cited study indicated that reasons for choosing different types of occupation lie in the different values attached to the occupation—men place higher value on extrinsic rewards, while women seek meaning in altruistic roles that carry intrinsic rewards (Eccles, 2007).

By studying a homogeneous sample of high-ability students, we can control for intellectual abilities and academic aspirations very specifically and gain a clear view of the remaining systematic differences related to preferences that can be explained by gender and migration background. Are there differences in choices between women and men in this homogeneous and competitive sample? Do students with a migration background, who have overcome a large number of hurdles and now belong to the high-ability students in Germany, differ from students who are not migrants? For women with a migration background, what effects at the intersection of multiple presumably "disadvantages" can be observed?

To answer these questions, we examine the study behavior of a large sample of business, engineering, and law students along typical career success factors. We find that irrespective of migration background, men are more likely to pursue activities that increase their human capital, such as completing a doctorate, while women tend to engage in lower-level temporary jobs and complete their studies in a shorter time compared to men. In contrast, in this selective sample of high-ability students, migration background has a marginal effect on students' behaviour. Perhaps most surprisingly, we find that the behaviour of women with a migration background–who potentially face "double discrimination"–equals that of male students (with and without migration background).

2.2. Choices in Competitive Situations in Sports

Part II of this dissertation focuses on another competitive setting, namely marathon competitions. Once again, the aim is to analyze the choices and behaviors of individuals in a competitive environment and to explore systematic differences in behavior.

Before every marathon, participants must make two important decisions that are pivotal for success: first, the decision to participate in the competition, and second, the decision on the initial pace[1]. Both decisions involve not only a subjective evaluation of external conditions, but also, and most importantly, an assessment of the athlete's potential performance, in order to determine a targeted pace.

There is a clear consensus in the literature and among athletes that constant pacing from start to finish is the optimal racing strategy and that there is no reasonable explanation for starting with a pace that is substantially below or above the targeted pace (see, e.g., Abbiss & Laursen, 2008; March et al., 2011). Any major deviation from the initial pace at a later stage of the race is a direct and inevitable consequence of an athlete's misjudgment of their own capabilities, which presents itself to the athlete in an immediate and often painful way.

The underlying decision parameter that is particularly crucial for an athlete's pacing choice is the *perceived likelihood of success.* In the first project (third project of the dissertation), I first analyze the systematic effects of gender, age, and prior experience on overconfident behavior. In the second project (fourth project of the dissertation), the emphasis is on the effect of negative feedback on an athlete's choice to stay in the competition and thus on feedback-adjusted assessment of the *perceived likelihood of success* of a certain pacing.

Using the context of marathon competition is a particularly suitable way of deriving insights about possible systematic differences in choices and behaviors that can be transferred to a professional context. A marathon context provides a large, diverse, and freely accessible sample that leaves plenty of room for natural experiments. In addition, marathon competitions provide a substantial physical challenge that requires considerable commitment from participants in both training and completion. Thus, self-selection into this competitive setting is comparable to moving into the labor market. This is particularly interesting in light of previous studies showing that women who have already participated in competitive settings are more likely to choose competition again even if they are risk-averse (Comeig et al., 2016). Moreover,

[1] Decision on the initial pace can be either a conscious decision as part of an overarching pacing strategy, or be taken intuitively.

unlike in laboratory experiments, where there often is an extrinsic payoff, in running a marathon individuals motivate themselves (as in the labor market) to satisfy an individual and internal goal. The objective data that can be obtained from marathons are another advantage over experiments carried out in a professional context. Marathon competitions are merciless but fair judges that confront all participants with identical and predetermined challenges. Not only can choices and behaviors be analyzed by using detailed result lists, but also their consequences are immediate, unambiguous, objective, and transparent.

2.2.1. Project 3: *"Young, Male, Experienced: What factors drive overconfidence? Empirical evidence from marathon running"*

Cognitive biases provide an important explanation for behaviors of individuals that violate the assumptions of the traditional expected utility model (Barberis, 2013; Kahneman & Tversky, 1979). In the third project of this dissertation we examine the phenomenon of overconfidence in the estimation of one's own performance. Habitually misperceiving one's own performance influences the assessment of the *likelihood of success* of an option and thereby hinders accurate decision-making and considerably influences the quality of decisions.

The consequences of overconfidence are widely documented, far-reaching, and devastating—from stock crises, strikes, and wars to suboptimal decision-making in economic and entrepreneurial contexts (see e.g.: Camerer & Lovallo, 1999; Dunlosky & Rawson, 2012; Glaser & Weber, 2007; Howard, 1985; Johnson, 2004; Malmendier & Tate, 2005; Odean, 1998). In this third project, we explore how gender, age, and prior experience affect the occurrence of overconfidence. We investigate these factors within the context of marathon races by analyzing the slowdown of 88,876 marathon runners. Their slowing down is seen as a direct and inevitable reaction to the overestimation of their initial race pace.

We confirm the large body of previous studies by revealing a clear gender gap: men have a stronger tendency towards overconfidence than women do. Furthermore, we show that age correlates with overconfidence, with young and old individuals in particular overestimating their potential performance. In addition, we shed light on the controversially discussed relationship of experience and overconfidence (C. Heath & Tversky, 1991; Menkhoff et al.,

2013) by illustrating that in our sample the tendency for overconfident behavior increases with experience.

2.2.2. Project 4: *"Are women more resilient? Gender differences in the reaction to negative feedback"*

The focus of this final project is on analyzing the choices and behaviors that occur in response to a setback or to negative feedback, with particular emphasis on gender differences.

Previous research in various fields has found that feedback on relative performance can eliminate existing gender gaps in competitiveness (e.g. Wozniak et al., 2011), self-confidence (e.g. Lenney, 1977), and ability to compete under pressure and performance (e.g. Cotton et al., 2013). However, until now there have only been a few contributions in the field of economics that have investigated the gender-specific effects of negative feedback and setbacks in a natural environment (see e.g. Wozniak et al., 2011; Haenni, 2019).

The fourth and final project of the dissertation serves two main goals. First, the objective of this study is to better understand how women and men respond to setbacks and negative feedback in the natural environment of a sport competition. The results are intended to serve as a basis for further investigations of possible policies and institutional measures that might be used to dissolve gender gaps in labor market outcomes. Second, the particular situation of a negative experience and resulting behavioral adjustments creates a valuable setting in which to gain a more detailed understanding of the parameters underlying decisions taken. A marked slowdown in a marathon race, perceived as implicit negative feedback on the chosen initial pace, can affect the individual's *perceived likelihood of success* when applying a certain pacing strategy. The transparent sporting context allows the athlete's race tactics to be tracked in the following year and inferences to be drawn concerning the direct effect of the negative feedback on the likelihood of that athlete re-entering a competition. It also allows adjustments in behavior in subsequent races to be studied.

We find that women who voluntarily participate in competitive settings are more likely to return to competition after a negative experience than are men. While this underscores that feedback indeed causes different reactions in men and women, it suggests that the characteristics and nature of the feedback are important. Men tend to avoid competitive

situations after receiving implicit negative feedback and increasingly compete after positive experiences. Women, by contrast, re-enter a competition regardless of the nature of the previous experience.

Chapter 7

Conclusion and Outlook

7.1. Conclusion

In the four projects of this dissertation, the behavior of individuals in competitive situations was examined using natural experiments. Embedded in rational choice theory it was shown that men and women differ systematically in their choices and behaviors. By virtue of their variation, the natural experiments conducted allow for a multi-layered picture of actual behavioral patterns in competitive situations outside of the laboratory. Overall, three main findings can be derived from the four experiments.

1. **Robust gender differences:** Clear differences in the behavior of men and women are evident in all four projects. The robustness of the evidence is particularly remarkable in light of the selective and competitive samples studied. On the one hand, the gender gap manifests itself clearly in the homogeneous sample of high-ability students, who not only resemble each other in their high cognitive ability, but who also socialize in comparable environments due to their preference for the same field of study. In the competitive, self-selective environment of marathon running, clear gender differences are evident, too.
2. **Competitive environments shape choices and behavior:** Both parts of the dissertation indicate that people who are exposed to competitive environments display special behavioral patterns that are not visible (in such a differentiated way) in the general population. Project 1 addresses the reaction of high-ability students to changes in the institutional framework, which leads them to anticipate the decreasing value of the signal of staying abroad by extending their stay abroad. Moreover, at the intersection of gender and migration background, the gender effects are surprisingly neutralized for women with a migration background in male-dominated fields of study. The results of the fourth project are particularly relevant as a starting point for further research.

Contrary to the findings of previous studies, the results indicate that women in competitive environments are significantly better at dealing with setbacks and negative feedback than men.

3. **Prevalence of overconfidence.** Although in the third project overconfidence was found especially in men and in younger and older athletes, it is important to note that an athlete's overestimation of their own performance occurs in the entire sample. We see that even female amateur runners overestimate their ability and inevitably slow down during the course of the race—significantly more than the fastest 1% of runners. In the fourth project we also find that, after a significant overestimation, runners react to feedback and improve the perception of their performance; but, although they get better in finding a suitable initial pace in the following race, they still tend to overestimate their ability. Here, in the context of the natural experiment, the severity and persistence of the overconfidence bias is again evident; despite the (presumably even physically painful) setback, athletes seem to either lack awareness or struggle to find sufficient action that reduces overestimation in the future.

7.2. Outlook

Further research on choices and behavior in competitive settings is highly desirable. First, the method of natural experiments should be increasingly used to shed light on differences in behavioral traits across other dimensions of diversity. In Germany, where social inequality is an enduring problem (Skopek & Passaretta, 2021), it is especially important to analyze choices and underlying behavioral patterns related to the educational paths of, for example, students with high cognitive abilities who come from lower socio-economic backgrounds. Although research on intersectionality has developed rapidly over the past 30 years, many aspects of the phenomenon are still under-researched, such as the interplay of not only gender and migration background, but social class and intellectual abilities (Crenshaw, 1989, 2019; Nichols & Stahl, 2019). For example, Fleischmann and Höhne (2013) argue that previous research mainly focuses on subgroups separately (e.g. immigrants vs. non-immigrants) and analyze gender

differences within subgroups and that there is a great research gap for multi-perspective approaches.

On the other hand, there is a need for further research on methods by which to reduce the gender gap. As detailed in the previous chapter, this dissertation confirms not only clear gender differences, but also especially the robustness of such differences in competitive settings. One of the most important drivers of the translation of these behavioral differences into actual disadvantage in the labor market is the intensification of the differences in mixed-sex competitions. In 2003, Gneezy et al. showed in their pioneer study that, as competitiveness increased, men's performance increased, in contrast to women's performance with a particularly strong effect in mixed-sex competitions. Booth and Yamamura (2018) confirmed the results in a study of professional speedboat racing in Japan and demonstrated that, in the case of mixed-sex competitions, men not only drove faster but also more aggressively, while women were slower in mixed competitions than in all-women races.

Not only the speedboat example, but also the results of the fourth project of this dissertation indicate that women can indeed deal effectively with competitive situations and benefit from competition. The remaining question here is: How can the natural mixed-competitions in professional life be designed in such a way that they are not (further) disadvantageous for women?

Possible measures for promoting gender diversity can be considered from two directions. They can either ‘push’ individuals in certain positions or address the respective ‘pull’ of decision-makers. Measures around ‘push’ factors usually counteract or prevent external hurdles (e.g. introduction of quota-like affirmative actions). However, not only the above-mentioned studies on performances in mixed-sex competitions but also the results of the projects presented in this dissertation indicate that merely ‘pushing’ women into a given environment does not in itself ensure a sustainable and comprehensive increase in the proportion of women. Rather, what is needed is support that strengthens the natural and personal ‘pull’ felt by women. Based on the findings about the choices and behaviors of individuals in competitive situations presented in the four projects of this dissertation, three fields of action and implications for further research can be identified:

1. **Transparency:** Establishing transparent conditions is one of the most important levers for promoting diversity in a professional context. This includes not only transparency about relative performance in the form of feedback, as discussed in the fourth project, but also transparent 'tournament conditions'. In their pioneer study, Niederle and Vesterlund (2007) call for transparent information about relative abilities, especially for high-ability women, as well as a reduction of the search cost for this kind of information. They expect this to lead to a significant increase in competitiveness for high-ability women and thus to a reduction of the gender gap. Recent studies also found that uncertainty and ambiguity about tournament conditions lead to a significant increase in performance and competitiveness for men, and the authors argue that organizations can promote gender balance merely by providing information (Balafoutas & Sutter, 2019). This dissertation underpins the need for increased transparency from two perspectives. First, the fourth project illustrates that feedback in a competitive environment is particularly beneficial when it is frank and, in fact, uncomfortable. It became apparent not only that women deal with setbacks efficiently, but also that feedback fosters skill-based selection: rigorous feedback leads overconfident men to select themselves out, while well-performing women stay in the competition. Second, in the second study, the importance of transparent conditions is demonstrated, especially for high-ability students. The findings make clear that women are more likely to choose activities that are less likely to directly increase human capital. Providing specific and 'cost-free' information is crucial, not to push women to different choices, but by reducing potential fears and prejudices, and thus expanding decision-making scope.
2. **Empowering the 'pull' factors—strengthening the expectations of success.** Encouragement and guidance using the findings about different perceptions of underlying parameters, especially the expectations of success, constitute a further important dimension. As shown in Part I of this dissertation, women are less likely to opt for a doctorate or self-employment—both of which options are not only considered to offer the possibility of realizing great benefits, but also entail high risks (Golde, 2005). Further research should target the effectiveness of particular interventions on the

perception of decision options and thus on decision patterns. Supportive measures, such as mentoring programs, help students gain new experiences by meeting new role models and getting in touch with success stories. These experiences allow them to reassess and recalibrate their perceptions of the *likelihood of success* and the benefits of an educational option.

In this context of reassessment of perceptions, it is also particularly important to provide a clear understanding of the true magnitude of the gender gap. For example, Eckel & Grossman (2002) have indicated that men (in contrast to women) tend to overestimate the gender gap in risk aversion. In the light of previous studies that have shown that stereotypical and exaggerated notions of gender differences lead to an increase of the existing gender gap, the investigation of gender differences believed to exist in relation to behavioral traits represents an important field of research that should be focused on more in the future (Bordalo et al., 2016; Niederle, 2016).

3. **Adapting the environment.** Creating professional settings that are based on the preference patterns of both genders is indispensable to increasing the share of women in leadership positions in the long run. Important measures are to reduce the density of competition and, in particular, to prevent direct head-to-head competition, as can be found in the professional context, for example, in the fight for promotion to a specific position. In the fourth project of this dissertation, it is clearly illustrated that women in competitive environments can certainly deal efficiently with feedback when they are competing with ‘the clock’ and only want to satisfy internal goals, as in marathon competitions: while this is not the case when they are in competition with a direct opponent. The projects in this dissertation focused on the identification of systematic behavioral differences in competitive situations. Further research should investigate how adapting the environment and changing the ‘tournament conditions’ can be beneficial for both men and women in mixed-sex competitions such as the labor market. For example criteria-based promotions (in contrast to competition-based promotions for vacant positions) could be particularly favorable for women, and the gender-specific impact of such a measure should be addressed in further research. On the other hand,

current studies show that women are more likely to stay in the competition when they are not in a small minority (Hogarth et al., 2012). In addition to the use of quotas, organizations with a low percentage of women in middle and top management should encourage and promote networking among women and strengthen their sense of unity and solidarity. Further research should explore the interaction of men and women in competitive settings, especially with the help of natural experiments, and through a variation of characteristics in single-sex as well as mixed-sex competitions. This will help to further identify the circumstances that are essential for mixed-gender competition to be effective for all parties involved.

References

Abbiss, C. R., & Laursen, P. B. (2008). Describing and understanding pacing strategies during athletic competition. *Sports Medicine*, *38*(3), 239–252. https://doi.org/10.2165/00007256-200838030-00004

Allen, E. J., Dechow, P. M., Pope, D. G., & Wu, G. (2017). Reference-Dependent Preferences: Evidence from Marathon Runners. *Management Science*, *63*(6), 1657–1672. https://doi.org/10.1287/mnsc.2015.2417

Almås, I., Cappelen, A. W., Salvanes, K. G., Sørensen, E. Ø., & Tungodden, B. (2016). What Explains the Gender Gap in College Track Dropout? Experimental and Administrative Evidence. *American Economic Review*, *106*(5), 296–302. https://doi.org/10.1257/aer.p2016107

Anderson, C., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, *103*(4), 718–735. https://doi.org/10.1037/a0029395

Antonovics, K., Arcidiacono, P., & Walsh, R. (2009). The Effects of Gender Interactions in the Lab and in the Field. *Review of Economics and Statistics*, *91*(1), 152–162. https://doi.org/10.1162/rest.91.1.152

Atkinson, S. M., Baird, S. B., & Frye, M. B. (2003). Do Female Mutual Fund Managers Manage Differently? *Journal of Financial Research*, *26*(1), 1–18. https://doi.org/10.1111/1475-6803.00041

Azmat, G., & Iriberri, N. (2010). The importance of relative performance feedback information: Evidence from a natural experiment using high school students. *Journal of Public Economics*, *94*(7-8), 435–452. https://doi.org/10.1016/j.jpubeco.2010.04.001

Balafoutas, L., & Sutter, M. (2012). Affirmative action policies promote women and do not harm efficiency in the laboratory. *Science*, *335*(6068), 579–582. https://doi.org/10.1126/science.1211180

Balafoutas, L., & Sutter, M. (2019). How uncertainty and ambiguity in tournaments affect gender differences in competitive behavior. *European Economic Review, 118,* 1–13. https://doi.org/10.1016/j.euroecorev.2019.05.005

Barberis, N. C. (2013). Thirty Years of Prospect Theory in Economics: A Review and Assessment. *The Journal of Economic Perspectives, 27*(1), 173–196. https://doi.org/10.1257/jep.27.1.173

Barnum, P., Liden, R. C., & Ditomaso, N. (1995). Double Jeopardy for Women and Minorities: Pay Differences with Age. *Academy of Management Journal, 38*(3), 863–880. https://doi.org/10.2307/256749

Barone, C., Triventi, M., & Assirelli, G. (2018). Explaining Social Inequalities in Access to University: A Test of Rational Choice Mechanisms in Italy. *European Sociological Review*, *34*(5), 554–569. https://doi.org/10.1093/esr/jcy028

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. *General series / National Bureau of Economic Research: no. 80*. National Bureau of Economic Research.

Becker, R. (2011). Integration von Migranten durch Bildung und Ausbildung – theoretische Erklärungen und empirische Befunde. In R. Becker (Ed.), *Integration durch Bildung: Bildungserwerb von jungen Migranten in Deutschland* (pp. 11–36). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-93232-3_1

Bélanger, J. J., Lafrenière, M.-A. K., Vallerand, R. J., & Kruglanski, A. W. (2013). Driven by fear: The effect of success and failure information on passionate individuals' performance. *Journal of Personality and Social Psychology, 104*(1), 180–195. https://doi.org/10.1037/a0029585

Bénabou, R., & Tirole, J. (2002). Self-Confidence and Personal Motivation. *The Quarterly Journal of Economics, 117*(3), 871–915. https://doi.org/10.1162/003355302760193913

Bench, S. W., Lench, H. C., Liew, J., Miner, K., & Flores, S. A. (2015). Gender Gaps in Overestimation of Math Performance. *Sex Roles, 72*(11), 536–546. https://doi.org/10.1007/s11199-015-0486-9

Berlin, N., & Dargnies, M.-P. (2016). Gender differences in reactions to feedback and willingness to compete. *Journal of Economic Behavior & Organization*, *130*, 320–336. https://doi.org/10.1016/j.jebo.2016.08.002

Bertrand, M., & Hallock, K. F. (2001). The Gender Gap in Top Corporate Jobs. *Industrial & Labor Relations Review*, *55*(1), 3–21. https://doi.org/10.1177/001979390105500101

Beyer, S., & Bowden, E. M. (1997). Gender Differences in Self-Perceptions: Convergent Evidence from Three Measures of Accuracy and Bias. *Personality and Social Psychology Bulletin*, *23*(2), 157–172. https://doi.org/10.1177/0146167297232005

BFUG. (2020). *Full Members of the European Higher Education Act (EHEA).* Bologna Follow-up Group Secretariat. http://www.ehea.info/page-full_members

Bills, D. B. (2003). Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment. *Review of Educational Research*, *73*(4), 441–469.

Black, S. E., & Strahan, P. E. (2001). The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry. *American Economic Review*, *91*(4), 814–831. https://doi.org/10.1257/aer.91.4.814

Blanch, D. C., Hall, J. A., Roter, D. L., & Frankel, R. M. (2008). Medical student gender and issues of confidence. *Patient Education and Counseling*, *72*(3), 374–381. https://doi.org/10.1016/j.pec.2008.05.021

Blau, F. D., & Kahn, L. M. (1994). Rising Wage Inequality and the U.S. Gender Gap. *The American Economic Review*, *84*(2), 23–28.

Blau, F. D., & Kahn, L. M. (2007). The Gender Pay Gap: Have Women Gone as Far as They Can? *Academy of Management Perspectives*, *21*(1), 7–23. https://doi.org/10.5465/amp.2007.24286161

Blau, F. D., & Kahn, L. M. (2017). The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature*, *55*(3), 789–865. https://doi.org/10.1257/jel.20160995

Bleidorn, W., Arslan, R. C., Denissen, J. J. A., Rentfrow, P. J., Gebauer, J. E., Potter, J., & Gosling, S. D. (2016). Age and gender differences in self-esteem. A cross-cultural

window. *Journal of Personality and Social Psychology*, 396–410. https://doi.org/10.1037/pspp0000078

BMBF, & KMK. (2018). *Die Umsetzung der Ziele des Bologna-Prozesses 2015-2018: Nationaler Bericht von Kultusministerkonferenz und Bundesministerium für Bildung und Forschung unter Mitwirkung von HRK, DAAD, Akkreditierungsrat, fzs, DSW und Sozialpartnern.* Federal Ministry of Education and Research Germany (BMBF) and The Conference of German Cultural Ministers (KMK). https://www.bmbf.de/de/der-bologna-prozess-die-europaeische-studienreform-1038.html

Bognanno, M. L. (2001). Corporate Tournaments. *Journal of Labor Economics*, *19*(2), 290–315. https://doi.org/10.1086/319562

Boll, C., & Leppin, J. S. (2015). Die geschlechtsspezifische Lohnlücke in Deutschland: Umfang, Ursachen und Interpretation. *Wirtschaftsdienst*, *95*(4), 249–254. https://doi.org/10.1007/s10273-015-1814-y

Booth, A., & Yamamura, E. (2018). Performance in Mixed-Sex and Single-Sex Competitions: What We Can Learn from Speedboat Races in Japan. *Review of Economics and Statistics*, *100*(4), 581–593. https://doi.org/10.1162/rest_a_00715

Bordalo, P., Coffman, K., Gennaioli, N., & Shleifer, A. (2016). Stereotypes. *The Quarterly Journal of Economics*, *131*(4), 1753–1794. https://doi.org/10.1093/qje/qjw029

Boudon, R. (1974). *Education, opportunity, and social inequality: Changing prospects in Western society*. *Wiley series in urban research*. Wiley-Interscience.

Bourdieu, P. (1977). Cultural Reproduction and Social Reproduction. In J. Karabel & A. H. Halsey (Eds.), *Power and Ideology in Education* (pp. 487–511). Oxford University Press.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture* (Rev. ed. / preface to the 1990 edition by Pierre Bourdieu). *Theory, culture & society*. London; Beverly Hills: Sage Publications.

Bourdieu, P., & Passeron, J.-C. (2005). *La reproduction: Éléments pour une théorie du système d'enseignement*. *Collection "Le sens commun"*. Éd. de Minuit.

Breen, D., Norris, M., Healy, R., & Anderson, R. (2018). Marathon Pace Control in Masters Athletes. *International Journal of Sports Physiology and Performance*, *13*(3), 332–338. https://doi.org/10.1123/ijspp.2016-0730

Breen, R., & Goldthorpe, J. H. (1997). Explaining educational differences: towards a formal rational action theory. *Rationality and Society*, *9*(3), 275–305. https://doi.org/10.1177/104346397009003002

Breen, R., van de Werfhorst, H. G., & Jäger M. (2014). Deciding under Doubt: A Theory of Risk Aversion, Time Discounting Preferences, and Educational Decision-making. *European Sociological Review*, *30*(2), 258–270. https://doi.org/10.1093/esr/jcu039

Büchel, F., & Frick, J. R. (2004). Immigrants in the UK and in West Germany? Relative income position, income portfolio, and redistribution effects. *Journal of Population Economics*, *17*(3). https://doi.org/10.1007/s00148-004-0183-4

Buser, T. (2016). The Impact of Losing in a Competition on the Willingness to Seek Further Challenges. *Management Science*, *62*(12), 3439–3449. https://doi.org/10.1287/mnsc.2015.2321

Buser, T., Niederle, M., & Oosterbeek, H. (2014). Gender, Competitiveness and Career Choices. *The Quarterly Journal of Economics*, *129*(3), 1409–1447. https://doi.org/10.3386/w18576

Buser, T., Niederle, M., & Oosterbeek, H. (2014). Gender, Competitiveness, and Career Choices *The Quarterly Journal of Economics*, *129*(3), 1409–1447. https://doi.org/10.1093/qje/qju009

Bütikofer, A., Jensen, S., & Salvanes, K. G. (2018). The role of parenthood on the gender gap among top earners. *European Economic Review*, *109*(2), 103–123. https://doi.org/10.1016/j.euroecorev.2018.05.008

Camerer, C., & Lovallo, D. (1999). Overconfidence and Excess Entry: An Experimental Approach. *The American Economic Review*, *89*(1), 306–318.

Card, D., Cardoso, A. R., & Kline, P. (2016). Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women. *The Quarterly Journal of Economics*, *131*(2), 633–686. https://doi.org/10.1093/qje/qjv038

Carlin, B. A., Gelb, B. D., Belinne, J. K., & Ramchand, L. (2018). Bridging the gender gap in confidence. *Business Horizons*, *61*(5), 765–774. https://doi.org/10.1016/j.bushor.2018.05.006

Cheng, A., & Florick, L. (2020). The Value of Study Abroad Experience in the Labor Market: Findings from a Resume Audit Experiment. *Working Paper in Education Reform Faculty and Graduate Students Publications*.

Cipollone, A., Patacchini, E., & Vallanti, G. (2014). Female labour market participation in Europe: novel evidence on trends and shaping factors. *IZA Journal of European Labor Studies*, *3*(1), 18. https://doi.org/10.1186/2193-9012-3-18

Clark, A., & Oswald, A. (1996). Satisfaction and comparison income. *Journal of Public Economics*, *61*(3), 359–381. https://doi.org/10.1016/0047-2727(95)01564-7

Comeig, I., Grau-Grau, A., Jaramillo-Gutiérrez, A., & Ramírez, F. (2016). Gender, self-confidence, sports, and preferences for competition. *Journal of Business Research*, *69*(4), 1418–1422. https://doi.org/10.1016/j.jbusres.2015.10.118

Constant, A., & Massey, D. S. (2003). Self-selection, earnings, and out-migration: A longitudinal study of immigrants to Germany. *Journal of Population Economics*, *16*(4), 631–653. https://doi.org/10.1007/s00148-003-0168-8

Cook, A., & Glass, C. (2014). Women and Top Leadership Positions: Towards an Institutional Analysis. *Gender, Work & Organization*, *21*(1), 91–103. https://doi.org/10.1111/gwao.12018

Cotton, C., McIntyre, F., & Price, J. (2013). Gender differences in repeated competition: Evidence from school math contests. *Journal of Economic Behavior & Organization*, *86*, 52–66. https://doi.org/10.1016/j.jebo.2012.12.029

Crenshaw, J. K. (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. *University of Chicago Legal Forum*, *14*, 538–554.

Crenshaw, J. K. (2019). *On intersectionality: Essential writings*. New Press.

Croson, R., & Gneezy, U. (2009). Gender Differences in Preferences. *Journal of Economic Literature*, *47*(2), 448–474. https://doi.org/10.1257/jel.47.2.448

Crul, M., Keskiner, E., & Lelie, F. (2017). The upcoming new elite among children of immigrants: a cross-country and cross-sector comparison. *Ethnic and Racial Studies*, *40*(2), 209–229. https://doi.org/10.1080/01419870.2017.1245432

Crul, M., Schneider, J., Keskiner, E., & Lelie, F. (2017). The multiplier effect: how the accumulation of cultural and social capital explains steep upward social mobility of children of low-educated immigrants. *Ethnic and Racial Studies*, *40*(2), 321–338. https://doi.org/10.1080/01419870.2017.1245431

Crul, M., Schneider, J., & van Praag, J. (2014). Upward mobility and questions of belonging in migrant families. *New Diversities*, *16*(1), 1–7.

Crul, M., Schnell, P., Herzog-Punzenberger, B., Wilmes, M., Slootmann, M., & Aparicio Gómez, R. (2012). 5 School careers of second-generation youth in Europe. Which education systems provide the best chances for success? In M. Crul, J. Schneider, & F. Lelie (Eds.), *The European Second Generation Compared* (pp. 101–164). Amsterdam University Press. https://doi.org/10.1515/9789048516926-006

DAAD and DZHW. *Wissenschaft weltoffen 2020 kompakt: English edition.* Deutscher Akademischer Austauschdienst (DAAD) and Deutsches Zentrum für Hochschul- und Wissenschaftsforschung (DZHW). http://www.wissenschaftweltoffen.de/kompakt/wwo2020_kompakt_en.pdf

Deaner, R. O., Carter, R. E., Joyner, M. J., & Hunter, S. K. (2015). Men are more likely than women to slow in the marathon. *Medicine and Science in Sports and Exercise*, *47*(3), 607–616. https://doi.org/10.1249/MSS.0000000000000432

DeZIM-Institut. (2020). *Teilhabe ohne Teilnahme? Wie Ostdeutsche und Menschen mit Migrationshintergrund in der bundesdeutschen Elite vertreten sind* (DRN No. 4). Berlin. Deutsches Zentrum für Integrations- und Migrationsforschung. https://www.dezim-institut.de/fileadmin/user_upload/Projekte/Eliten/ResearchNotes_04_201030_ansicht.pdf

Dezsö, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal*, *33*(9), 1072–1089. https://doi.org/10.1002/smj.1955

Dickerson, A., & Taylor, M. A. (2000). Self-Limiting Behavior in Women. *Group & Organization Management*, *25*(2), 191–210. https://doi.org/10.1177/1059601100252006

Dohmen, T., & Falk, A. (2011). Performance Pay and Multidimensional Sorting: Productivity, Preferences, and Gender. *American Economic Review*, *101*(2), 556–590. https://doi.org/10.1257/aer.101.2.556

Doyle, S., Gendall, P., Meyer, L. H., Hoek, J., Tait, C., McKenzie, L., & Loorparg, A. (2010). An Investigation of Factors Associated With Student Participation in Study Abroad. *Journal of Studies in International Education*, *14*(5), 471–490. https://doi.org/10.1177/1028315309336032

Dunlosky, J., & Rawson, K. A. (2012). Overconfidence produces underachievement: Inaccurate self evaluations undermine students' learning and retention. *Learning and Instruction*, *22*(4), 271–280. https://doi.org/10.1016/j.learninstruc.2011.08.003

Dunning, D., Heath, C., & Suls, J. M. (2004). Flawed Self-Assessment: Implications for Health, Education, and the Workplace. *Psychological Science in the Public Interest : A Journal of the American Psychological Society*, *5*(3), 69–106. https://doi.org/10.1111/j.1529-1006.2004.00018.x

Dustmann, C., & Fabbri, F. (2003). Language Proficiency and Labour Market Performance of Immigrants in the UK. *The Economic Journal*, *113*(489), 695–717. http://www.jstor.org/stable/3590195

Dweck, C. S., Davidson, W., Nelson, S., & Enna, B. (1978). Sex differences in learned helplessness: II. The contingencies of evaluative feedback in the classroom and III. An experimental analysis. *Developmental Psychology*, *14*(3), 268–276. https://doi.org/10.1037/0012-1649.14.3.268

Easterlin, E. A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization*, *27*(1), 35–47. https://doi.org/10.1016/0167-2681(95)00003-B

Eccles, J. S. (2007). Where Are All the Women? Gender Differences in Participation in Physical Science and Engineering. In S. J. Ceci & W. M. Williams (Eds.), *Why aren't more women in science? Top researchers debate the evidence* (pp. 199–210). American Psychological Association. https://doi.org/10.1037/11546-016

Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in attitudes toward financial risk. *Evolution and Human Behavior*, *23*(4), 281–295. https://doi.org/10.1016/S1090-5138(02)00097-1

EHEA. (2020). *Website of the European Higher Edcuation Area.* Bologna Process Secretariat. http://www.ehea.info/

Ehrlinger, J., & Dunning, D. (2003). How chronic self-views influence (and potentially mislead) estimates of performance. *Journal of Personality and Social Psychology, 84*(1), 5–17.

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72*(1), 218–232.

Elliot, A. J., & Thrash, T. M. (2004). The intergenerational transmission of fear of failure. *Personality and Social Psychology Bulletin*, *30*(8), 957–971. https://doi.org/10.1177/0146167203262024

Eriksson, T. (1999). Executive Compensation and Tournament Theory: Empirical Tests on Danish Data. *Journal of Labor Economics*, *17*(2), 262–280. https://doi.org/10.1086/209920

Ertac, S., & Szentes, B. (2011). The Effect of Information on Gender Differences in Competitiveness: Experimental Evidence. *Koç University-TUSIAD Economic Research Forum Working Papers*(1104).

European Commission. (2020). *ETER Database: European Tertiary Education Register*. https://www.eter-project.com/#/search

European Commission. (2021). *The Bologna Process and the European Higher Education Area*. https://ec.europa.eu/education/policies/higher-education/bologna-process-and-european-higher-education-area_en

Evers, A., & Sieverding, M. (2014). Why do Highly Qualified Women (Still) Earn Less? Gender Differences in Long-Term Predictors of Career Success. *Psychology of Women Quarterly*, *38*(1), 93–106. https://doi.org/10.1177/0361684313498071

EWOB. (2019). *Gender Diversity Index 2019*. Brussels. European Women on Boards. https://europeanwomenonboards.eu/portfolio/gdi-2019/

Fleischmann, F., & Höhne, J. (2013). Gender and migration on the labour market: Additive or interacting disadvantages in Germany? *Social Science Research*, 1325–1345. https://doi.org/10.1016/j.ssresearch.2013.05.006

Flory, J. A., Gneezy, U., Leonard, K. L., & List, J. A. (2018). Gender, age, and competition: A disappearing gap? *Journal of Economic Behavior & Organization*, *150*, 256–276. https://doi.org/10.1016/j.jebo.2018.03.027

French, M. T., Homer, J. F., Popovici, I., & Robins, P. K. (2015). What You Do in High School Matters: High School GPA, Educational Attainment, and Labor Market Earnings as a Young Adult. *Eastern Economic Journal*, *41*(3), 370–386. https://doi.org/10.1057/eej.2014.22

Frick, B., & Maihaus, M. (2016a). The (ir-)relevance of internships: Signaling, screening, and selection in the labor market for university graduates. *Business Administration Review*, *76*(5), 377–388.

Frick, B., & Maihaus, M. (2016b). The structure and determinants of expected and actual starting salaries of higher education students in Germany: identical or different?

Education Economics, *24*(4), 374–392. https://doi.org/10.1080/09645292.2015.1110115

Frick, B., & Prinz, J. (2007). Pay and Performance in Professional Road Running: The Case of City Marathons. *International Journal of Sport Finance*, *2*(1), 25–35.

Fuller, R., & Schoenberger, R. (1991). The Gender Salary Gap: Do Academic Achievement, Internship Experience, and College Major Make a Difference? *Social Science Quarterly*, *72*(4), 715–726.

Gabay-Egozi, L., Shavit, Y., & Yaish, M. (2010). Curricular Choice: A Test of a Rational Choice Model of Education. *European Sociological Review*, *26*(4), 447–463. https://doi.org/10.1093/esr/jcp031

Gabay-Egozi, L., Shavit, Y., & Yaish, M. (2015). Gender Differences in Fields of Study: The Role of Significant Others and Rational Choice Motivations. *European Sociological Review*, *31*(3), 284–297. https://doi.org/10.1093/esr/jcu090

Galla, B. M., Shulman, E. P., Plummer, B. D., Gardner, M., Hutt, S. J., Goyer, J. P., D'Mello, S. K., Finn, A. S., & Duckworth, A. L. (2019). Why High School Grades Are Better Predictors of On-Time College Graduation Than Are Admissions Test Scores: The Roles of Self-Regulation and Cognitive Ability. *American Educational Research Journal*, *56*(6), 2077–2115. https://doi.org/10.3102/0002831219843292

Gault, J., Redington, J., & Schlager, T. (2000). Undergraduate Business Internships and Career Success: Are They Related? *Journal of Marketing Education*, *22*(1), 45–53. https://doi.org/10.1177/0273475300221006

Gervais, S., & Odean, T. (2001). Learning to Be Overconfident. *The Review of Financial Studies*, *14*(1), 1–27. https://doi.org/10.2139/ssrn.36313

Gill, D., & Prowse, V. (2012). A Structural Analysis of Disappointment Aversion in a Real Effort Competition. *American Economic Review*, *102*(1), 469–503. https://doi.org/10.1257/aer.102.1.469

Gill, D., & Prowse, V. (2014). Gender differences and dynamics in competition: The role of luck. *Quantitative Economics*, *5*(2), 351–376. https://doi.org/10.3982/QE309

Glaser, M., & Weber, M. (2007). Overconfidence and trading volume. *The Geneva Risk and Insurance Review*, *32*(1), 1–36. https://doi.org/10.1007/s10713-007-0003-3

Gneezy, U., Niederle, M., & Rustichini, A. (2003). Performance in Competitive Environments: Gender Differences. *The Quarterly Journal of Economics*, *118*(3), 1049–1074. https://doi.org/10.1162/00335530360698496

Gneezy, U., & Rustichini, A. (2004). Gender and Competition at a Young Age. *American Economic Review*, *94*(2), 377–381. https://doi.org/10.1257/0002828041301821

Golde, C. M. (2005). The Role of the Department and Discipline in Doctoral Student Attrition: Lessons from Four Departments. *The Journal of Higher Education*, *76*(6), 669–700. https://doi.org/10.1080/00221546.2005.11772304

Goldin, C. (2014). A Grand Gender Convergence: Its Last Chapter. *American Economic Review*, *104*(4), 1091–1119. https://doi.org/10.1257/aer.104.4.1091

Goldthorpe, J. H. (1996). Class Analysis and the Reorientation of Class Theory: The Case of Persisting Differentials in Educational Attainment. *The British Journal of Sociology*, *47*(3), 481. https://doi.org/10.2307/591365

Goldthorpe, J. H. (1998). Rational Action Theory for Sociology. *The British Journal of Sociology*, *49*(2), 167. https://doi.org/10.2307/591308

Guillén, L., Mayo, M., & Karelaia, N. (2018). Appearing self-confident and getting credit for it: Why it may be easier for men than women to gain influence at work. *Human Resource Management*, *57*(4), 839–854. https://doi.org/10.1002/hrm.21857

Günther, C., Ekinci, N. A., Schwieren, C., & Strobel, M. (2010). Women can't jump? - An experiment on competitive attitudes and stereotype threat. *Journal of Economic Behavior & Organization*, *75*(3), 395–401. https://doi.org/10.1016/j.jebo.2010.05.003

Haenni, S. (2019). Ever tried. Ever failed. No matter? On the demotivational effect of losing in repeated competitions. *Games and Economic Behavior*, *115*, 346–362. https://doi.org/10.1016/j.geb.2019.03.012

Hansson, P., Rönnlund, M., Juslin, P., & Nilsson, L.-G. (2008). Adult age differences in the realism of confidence judgments: Overconfidence, format dependence, and cognitive predictors. *Psychology and Aging*, *23*(3), 531–544. https://doi.org/10.1037/a0012782

Hardies, K., Breesch, D., & Branson, J. (2013). Gender differences in overconfidence and risk taking: Do self-selection and socialization matter? *Economics Letters*, *118*(3), 442–444. https://doi.org/10.1016/j.econlet.2012.12.004

Hartmann, J. (2016). Assimilation over the Life Course? The Career Mobility of Second-Generation Turkish Men in Germany. *Zeitschrift Für Soziologie*, *45*(4), 281–297. https://doi.org/10.1515/zfsoz-2015-1016

Hartmann, M. (2002). *Der Mythos von den Leistungseliten: Spitzenkarrieren und soziale Herkunft in Wirtschaft, Politik, Justiz und Wissenschaft*. Campus-Verlag.

Heath, A. (2013). *Unequal chances: Ethnic minorities in western labour markets*. *Proceedings of the British Academy: Vol. 137*. Oxford Univ. Press. https://doi.org/10.5871/bacad/9780197263860.001.0001

Heath, A., Rothon, C., & Kilpi, E. (2008). The Second Generation in Western Europe: Education, Unemployment, and Occupational Attainment. *Annual Review of Sociology*, *34*(1), 211–235. https://doi.org/10.1146/annurev.soc.34.040507.134728

Heath, C., & Tversky, A. (1991). Preference and belief: Ambiguity and competence in choice under uncertainty. *Journal of Risk and Uncertainty*, *4*(1), 5–28. https://doi.org/10.1007/BF00057884

Hogarth, R. M., Karelaia, N., & Trujillo, C. A. (2012). When should I quit? Gender differences in exiting competitions. *Journal of Economic Behavior & Organization*, *83*(1), 136–150. https://doi.org/10.1016/j.jebo.2011.06.021

Howard, M. (1985). The Causes of war and other essays. *International Journal on World Peace*, *2*(2), 131–133.

Hügelschäfer, S., & Achtziger, A. (2014). On confident men and rational women: It's all on your mind(set). *Journal of Economic Psychology*, *41*, 31–44. https://doi.org/10.1016/j.joep.2013.04.001

Hunter, S. K. (2014). Sex Differences in Human Fatigability: Mechanisms and Insight to Physiological Responses. *Acta Physiologica (Oxford, England)*, *210*(4), 768–789. https://doi.org/10.1111/apha.12234

Huntington-Klein, N. (2021). Human capital versus signaling is empirically unresolvable. *Empirical Economics*, *60*(5), 2499–2531. https://doi.org/10.1007/s00181-020-01837-z

Jackson, S. (2003). Recent Research on Team and Organizational Diversity: SWOT Analysis and Implications. *Journal of Management*, *29*(6), 801–830. https://doi.org/10.1016/S0149-2063(03)00080-1

Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why Differences Make a Difference: A Field Study of Diversity, Conflict and Performance in Workgroups. *Administrative Science Quarterly*, *44*(4), 741–763. https://doi.org/10.2307/2667054

Job, R. (1990). The application of learning theory to driving confidence: The effect of age and the impact of random breath testing. *Accident Analysis & Prevention*, *22*(2), 97–107. https://doi.org/10.1016/0001-4575(90)90061-O

John, J. P. (2017). Gender differences and the effect of facing harder competition. *Journal of Economic Behavior & Organization*, *143*, 201–222. https://doi.org/10.1016/j.jebo.2017.08.012

Johnson, D. D. (2004). *Overconfidence and War: The Havoc and Glory of Positive Illusions*. Harvard University Press. http://www.jstor.org/stable/j.ctvk12rcg https://doi.org/10.2307/j.ctvk12rcg

Jonsson, J. O., & Rudolphi, F. (2011). Weak Performance--Strong Determination: School Achievement and Educational Choice among Children of Immigrants in Sweden. *European Sociological Review*, *27*(4), 487–508. https://doi.org/10.1093/esr/jcq021

Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise: A failure to disagree. *The American Psychologist*, *64*(6), 515–526. https://doi.org/10.1037/a0016755

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263. https://doi.org/10.2307/1914185

Kamas, L., & Preston, A. (2012). The importance of being confident; gender, career choice, and willingness to compete. *Journal of Economic Behavior & Organization*, *83*(1), 82–97. https://doi.org/10.1016/j.jebo.2011.06.013

Kao, G., & Thompson, J. S. (2003). Racial and Ethnic Stratification in Educational Achievement and Attainment. *Annual Review of Sociology*, *29*(1), 417–442. https://doi.org/10.1146/annurev.soc.29.010202.100019

Kimball, M. M., & Gray, V. A. (1982). Feedback and performance expectancies in an academic setting. *Sex Roles*, *8*(9), 999–1007. https://doi.org/10.1007/BF00290024

Kirchler, E., & Maciejovsky, B. (2002). Simultaneous Over- and Underconfidence: Evidence from Experimental Asset Markets. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.303387

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, *119*(2), 254–284. https://doi.org/10.1037/0033-2909.119.2.254

KMK. (2020). *Schulstatistik: Abiturnoten im Ländervergleich.* The Conference of German Cultural Ministers (KMK). https://www.kmk.org/dokumentation-statistik/statistik/schulstatistik/abiturnoten.html

Knechtle, B., Knechtle, R., Stiefel, M., Zingg, M. A., Rosemann, T., & Rüst, C. A. (2015). Variables that influence Ironman triathlon performance - what changed in the last 35 years? *Open Access Journal of Sports Medicine*, *6*, 277–290. https://doi.org/10.2147/OAJSM.S85310

Konings, M. J., & Hettinga, F. J. (2018). Pacing Decision Making in Sport and the Effects of Interpersonal Competition: A Critical Review. *Sports Medicine (Auckland, N.Z.)*, *48*(8), 1829–1843. https://doi.org/10.1007/s40279-018-0937-x

Konyali, A., & Crul, M. (2017). Professionals Made in Germany: Employing a Turkish Migration Background in High-Status Positions. *Social Inclusion*, *5*(1), 55–65. https://doi.org/10.17645/si.v5i1.780

Kratz, F., & Netz, N. (2018). Which mechanisms explain monetary returns to international student mobility? *Studies in Higher Education*, *43*(2), 375–400. https://doi.org/10.1080/03075079.2016.1172307

Krawczyk, M., & Wilamowski, M. (2017). Are We All Overconfident in the Long Run? Evidence from One Million Marathon Participants. *Journal of Behavioral Decision Making*, *30*(3), 719–730. https://doi.org/10.1002/bdm.1984

Kray, L. J., & Thompson, L. (2004). Gender Stereotypes and negotiation performance: an Examination of theory and research. *Research in Organizational Behavior*, *26*, 103–182. https://doi.org/10.1016/S0191-3085(04)26004-X

Kristen, C., & Granato, N. (2007). The educational attainment of the second generation in Germany. *Ethnicities*, *7*(3), 343–366. https://doi.org/10.1177/1468796807080233

Kristen, C., Reimer, D., & Kogan, I. (2008). Higher Education Entry of Turkish Immigrant Youth in Germany. *International Journal of Comparative Sociology*, *49*(2-3), 127–151. https://doi.org/10.1177/0020715208088909

Kuhnen, C. M., & Tymula, A. (2012). Feedback, Self-Esteem, and Performance in Organizations. *Management Science*, *58*(1), 94–113. https://doi.org/10.1287/mnsc.1110.1379

Kultusministerkonferenz. (2006-2017). *Abiturnoten im Ländervergleich.* Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland. https://www.kmk.org/de/dokumentation-statistik/statistik/schulstatistik/abiturnoten.html

Lazear, E. P. (2018). Compensation and Incentives in the Workplace. *The Journal of Economic Perspectives*, *32*(3), 195–214. https://www.jstor.org/stable/26473070

Legge, S., & Schmid, L. (2013). Rankings, Success, and Individual Performance: Evidence from a Natural Experiment. *University of St. Gallen Law & Economics, Working Paper No. 2013-13.* https://doi.org/10.2139/ssrn.2161903

Lenney, E. (1977). Women's self-confidence in achievement settings. *Psychological Bulletin*, *84*(1), 1–13. https://doi.org/10.1037/0033-2909.84.1.1

Löfgren, K.-G., Persson, T., & Weibull, J. W. (2002). Markets with Asymmetric Information: The Contributions of George Akerlof, Michael Spence and Joseph Stiglitz. *Scandinavian Journal of Economics*, *104*(2), 195–211. https://doi.org/10.1111/1467-9442.00280

Lörz, M., Netz, N., & Quast, H. (2016). Why do students from underprivileged families less often intend to study abroad? *Higher Education*, *72*, 153–174. https://doi.org/10.1007/s10734-015-9943-1

Lundeberg, M. A., Fox, P. W., & Puncochar, J. (1994). Highly confident but wrong: Gender differences and similarities in confidence judgments. *Journal of Educational Psychology*, *86*(1), 114–121. https://doi.org/10.1037/0022-0663.86.1.114

Luttmer, E. F. P. (2005). Neighbors as Negatives: Relative Earnings and Well-Being. *The Quarterly Journal of Economics*, *120*(3), 963–1002. https://doi.org/10.1093/qje/120.3.963

Malmendier, U., & Tate, G. (2005). Ceo Overconfidence and Corporate Investment. *The Journal of Finance*, *60*(6), 2661–2700. https://doi.org/10.1111/j.1540-6261.2005.00813.x

Mann, S. C., & Locke, P. R. (2001). House Money and Overconfidence on the Trading Floor. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.295108

Mannix, E., & Neale, M. A. (2005). What Differences Make a Difference? The Promise and Reality of Diverse Teams in Organizations. *Psychological Science in the Public Interest : A Journal of the American Psychological Society*, *6*(2), 31–55. https://doi.org/10.1111/j.1529-1006.2005.00022.x

March, D. S., Vanderburgh, P. M., Titlebaum, P. J., & Hoops, M. L. (2011). Age, sex, and finish time as determinants of pacing in the marathon. *Journal of Strength and Conditioning Research*, *25*(2), 386–391. https://doi.org/10.1519/JSC.0b013e3181bffd0f

Masclet, D., Peterle, E., & Larribeau, S. (2015). Gender differences in tournament and flat-wage schemes: An experimental study. *Journal of Economic Psychology*, *47*, 103–115. https://doi.org/10.1016/j.joep.2015.01.003

McCarty, P. A. (1986). Effects of Feedback on the self-confidence of men and women. *Academy of Management Journal*, *29*(4), 840–847. https://doi.org/10.2307/255950

McGraw, A. P., Mellers, B. A., & Ritov, I. (2004). The affective costs of overconfidence. *Journal of Behavioral Decision Making*, *17*(4), 281–295. https://doi.org/10.1002/bdm.472

McKinsey & Company. (2020). *Diversity Wins: How inclusion matters*. https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters#

Menkhoff, L., Schmeling, M., & Schmidt, U. (2013). Overconfidence, experience, and professionalism: An experimental study. *Journal of Economic Behavior & Organization*, *86*, 92–101. https://doi.org/10.1016/j.jebo.2012.12.022

Messer, D., & Wolter, S. C. (2007). Are student exchange programs worth it? *Higher Education*, *54*(5), 647–663.

Michie, F., Glachan, M., & Bray, D. (2001). An Evaluation of Factors Influencing the Academic Self-concept, Self-esteem and Academic Stress for Direct and Re-entry Students in Higher Education. *Educational Psychology*, *21*(4), 455–472. https://doi.org/10.1080/01443410120090830

Moncrief, W. C., Babakus, E., Cravens, D. W., & Johnston, M. W. (2000). Examining Gender Differences in Field Sales Organizations. *Journal of Business Research*, *49*(3), 245–257. https://doi.org/10.1016/S0148-2963(99)00019-3

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological Review*, *115*(2), 502–517. https://doi.org/10.1037/0033-295X.115.2.502

Mullen, A. L. (2009). Elite destinations: pathways to attending an Ivy League university. *British Journal of Sociology of Education*, *30*(1), 15–27. https://doi.org/10.1080/01425690802514292

Netz, N. (2015). What Deters Students from Studying Abroad? Evidence from Four European Countries and Its Implications for Higher Education Policy. *Higher Education Policy*, *28*(2), 151–174. https://doi.org/10.1057/hep.2013.37

Netz, N., & Finger, C. (2016). New Horizontal Inequalities in German Higher Education? Social Selectivity of Studying Abroad between 1991 and 2012. *Sociology of Education*, *89*(2), 79–98. https://doi.org/10.1177/0038040715627196

Neumann, J. von, & Morgenstern, O. (1944). *Theory of games and economic behavior*. *Princeton classic editions*. Princeton University Press.

Newman, R. S. (1984). Children's numerical skill and judgments of confidence in estimation. *Journal of Experimental Child Psychology*, *37*(1), 107–123. https://doi.org/10.1016/0022-0965(84)90061-4

Nichols, S., & Stahl, G. (2019). Intersectionality in higher education research: a systematic literature review. *Higher Education Research & Development*, *38*(6), 1255–1268. https://doi.org/10.1080/07294360.2019.1638348

Niederle, M. (2016). Gender. In J. Kagel & A. E. Roth (Eds.), *Handbook of Experimental Economics* (2nd ed., pp. 481–553). Princeton University Press.

Niederle, M., Segal, C., & Vesterlund, L. (2013). How Costly Is Diversity? Affirmative Action in Light of Gender Differences in Competitiveness. *Management Science*, *59*(1), 1–16. https://doi.org/10.1287/mnsc.1120.1602

Niederle, M., & Vesterlund, L. (2007). Do Women Shy Away From Competition? Do Men Compete Too Much? *The Quarterly Journal of Economics*, *122*(3), 1067–1101. https://doi.org/10.1162/qjec.122.3.1067

Nikolaidis, P. T., Cuk, I., & Knechtle, B. (2019). Pacing of Women and Men in Half-Marathon and Marathon Races. *Medicina (Kaunas, Lithuania)*, *55*(1). https://doi.org/10.3390/medicina55010014

Nikolaidis, P. T., & Knechtle, B. (2017). Effect of age and performance on pacing of marathon runners. *Open Access Journal of Sports Medicine*, *8*, 171–180. https://doi.org/10.2147/OAJSM.S141649

The Noble Foundation. (2021). *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2021: Nobel Prize Outreach AB 2021*. NobelPrize.org

Odean, T. (1998). Do Investors Trade Too Much? *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.94143

Odgers Berndtson. (2021). *DAX-Vorstandsreport Profile von DAX-Vorständen 2005 bis 2021*. https://www.odgersberndtson.com/media/10797/dax-report-2021_odgers-berndtson.pdf

OECD. (2012). *Untapped Skills: Realising the Potential of Immigrant Students*. OECD Publishing. https://doi.org/10.1787/9789264172470-en

Opp, K.-D. (1999). Contending Conceptions of the Theory of Rational Action. *Journal of Theoretical Politics, 11*(2), 171–202. https://doi.org/10.1177/0951692899011002002

Ors, E., Palomino, F., & Peyrache, E. (2013). Performance Gender Gap: Does Competition Matter? *Journal of Labor Economics, 31*(3), 443–499. https://doi.org/10.1086/669331

Page, S. E. (2008). *The difference: How the power of diversity creates better groups, firms, schools, and societies*. Princeton University Press.

Parey, M., & Waldinger, F. (2011). Studying Abroad and the Effect on International Labour Market Mobility: Evidence from the Introduction of ERASMUS. *The Economic Journal, 121*(551), 194–222. https://doi.org/10.1111/j.1468-0297.2010.02369.x

Parro, F. (2012). International Evidence on the Gender Gap in Education over the Past Six Decades: A Puzzle and an Answer to It. *Journal of Human Capital, 6*(2), 150–185. https://doi.org/10.1086/666849

Parzinger, N. (2018). *Azur Associate Erhebung 2017.* Azur. https://www.azur-online.de/artikel/glaeserne-decke-in-kanzleien-nur-jeder-zehnte-vollpartner-ist-eine-frau/#

Petzold, K. (2017). Studying Abroad as a Sorting Criterion in the Recruitment Process: A Field Experiment Among German Employers. *Journal of Studies in International Education, 21*(5), 412–430. https://doi.org/10.1177/1028315317697543

Petzold, K., & Moog, P. (2018). What shapes the intention to study abroad? An experimental approach. *Higher Education*, *75*(1), 35–54. https://doi.org/10.1007/s10734-017-0119-z

Pliske, R. M., & Mutter, S. A. (1996). Age differences in the accuracy of confidence judgments. *Experimental Aging Research*, *22*(2), 199–216. https://doi.org/10.1080/03610739608254007

Plous, S. (1993). *The psychology of judgement and decision making*. *McGraw-Hill series in social psychology*. McGraw-Hill.

Politis, D., Winborg, J., & Dahlstrand, Å. L. (2012). Exploring the resource logic of student entrepreneurs. *International Small Business Journal: Researching Entrepreneurship*, *30*(6), 659–683. https://doi.org/10.1177/0266242610383445

Presley, A., Damron-Martinez, D., & Zhang, L. (2010). A Study of Business Student Choice to Study Abroad: A Test of the Theory of Planned Behavior. *Journal of Teaching in International Business*, *21*(4), 227–247. https://doi.org/10.1080/08975930.2010.526009

Price, J. (2008). Gender Differences in the Response to Competition. *ILR Review*, *61*(3), 320–333. https://doi.org/10.1177/001979390806100303

Relikowski, I., Yilmaz, E., & Blossfeld, H.-P. (2012). Wie lassen sich die hohen Bildungsaspirationen von Migranten erklären? Eine Mixed-Methods-Studie zur Rolle von strukturellen Aufstiegschancen und individueller. In R. Becker & H. Solga (Eds.), *Kölner Zeitschrift für Soziologie und Sozialpsychologie. Soziologische Bildungsforschung* (Vol. 52, pp. 111–136). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-00120-9_5

Relyea, C., Cocchiara, F. K., & Studdard, N. L. (2008). The Effect of Perceived Value in the Decision to Participate in Study Abroad Programs. *Journal of Teaching in International Business*, *19*(4), 346–361. https://doi.org/10.1080/08975930802427551

Riordan, C. M., & Shore, L. M. (1997). Demographic diversity and employee attitudes: An empirical examination of relational demography within work units. *Journal of Applied Psychology*, *82*(3), 342–358. https://doi.org/10.1037/0021-9010.82.3.342

Risse, L., Farrell, L., & Fry, T. R. L. (2018). Personality and pay: do gender gaps in confidence explain gender gaps in wages? *Oxford Economic Papers*, *70*(4), 919–949. https://doi.org/10.1093/oep/gpy021

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261–288. https://doi.org/10.1037/0033-2909.130.2.261

Robinson, G., & Dechant, K. (1997). Building a business case for diversity. *Academy of Management Perspectives*, *11*(3), 21–31. https://doi.org/10.5465/ame.1997.9709231661

Roepstorff, C., Steffensen, C. H., Madsen, M., Stallknecht, B., Kanstrup, I.-L., Richter, E. A., & Kiens, B. (2002). Gender differences in substrate utilization during submaximal exercise in endurance-trained subjects. *American Journal of Physiology. Endocrinology and Metabolism*, *282*(2), E435-47. https://doi.org/10.1152/ajpendo.00266.2001

Rosenqvist, O., & Nordström Skans, O. (2015). Confidence enhanced performance? – The causal effects of success on future performance in professional golf tournaments. *Journal of Economic Behavior & Organization*, *117*, 281–295. https://doi.org/10.1016/j.jebo.2015.06.020

Rubin, J. Z., & Brown, B. R. (1975). *The Social Psychology of Bargaining and Negotiation*. Elsevier Science; Academic Press.

Salikutluk, Z. (2016). Why Do Immigrant Students Aim High? Explaining the Aspiration–Achievement Paradox of Immigrants in Germany. *European Sociological Review*, *32*(5), 581–592. https://doi.org/10.1093/esr/jcw004

Salikutluk, Z., Giesecke, J., & Kroh, M. (2020). *The Situation of Female Immigrants on the German Labour Market: A Multi-Perspective Approach: SOEPpapers on Multidisciplinary Panel Data Research* (No. 1072). DIW Berlin, The German Socio-Economic Panel (SOEP).

Sánchez Barrioluengo, M., & Flisi, S. (2017). *Student mobility in tertiary education: Institutional factors and regional attractiveness.* Publications Office of the European Union. JRC science for policy report.

Scala, N. M., Tomasi, S., Goncher, A., & Bursic, K. M. (2018). Motivation and Analytics: Comparing Business and Engineering Students. *INFORMS Transactions on Education*, *19*(1). https://doi.org/10.1287/ited.2017.0187

Schneebaum, A., Rumplmaier, B., & Altzinger, W. (2016). Gender and migration background in intergenerational educational mobility. *Education Economics*, *24*(3), 239–260. https://doi.org/10.1080/09645292.2015.1006181

Schofer, E., & Meyer, J. W. (2005). The Worldwide Expansion of Higher Education in the Twentieth Century. *American Sociology Review*, *70*(6), 898–920. https://doi.org/10.1177/000312240507000602

Sewell, W. H., Haller, A. O., & Ohlendorf, G. W. (1970). The Educational and Early Occupational Status Attainment Process: Replication and Revision. *American Sociological Review*, *35*(6), 1014. https://doi.org/10.2307/2093379

Skopek, J., & Passaretta, G. (2021). Socioeconomic Inequality in Children's Achievement from Infancy to Adolescence: The Case of Germany. *Social Forces; a Scientific Medium of Social Study and Interpretation*, *100*(1), 86–112. https://doi.org/10.1093/sf/soaa093

Spence, M. (1973). Job Market Signaling. *The Quarterly Journal of Economics*, *87*(3), 355–374. https://doi.org/10.1016/B978-0-12-214850-7.50025-5

Statistisches Bundesamt. (2017). *Fachserie 1 Reihe 1.2 - Bevölkerung und Erwerbstätigkeit. Wanderungen (Wanderungsstatistik)*. Wiesbaden. Statistisches Bundesamt.

Statistisches Bundesamt. (2018). *Bevölkerung und Erwerbstätigkeit: Bevölkerung mit Migrationshintergrund - Ergebnisse des Mikrozensus 2017.*

Statistisches Bundesamt. (2019). *Statistische Jahrbuch 2019: 3-Bildung*. https://www.destatis.de/DE/Themen/Querschnitt/Jahrbuch/statistisches-jahrbuch-2019-dl.pdf?__blob=publicationFile

Stocké, V. (2007). Explaining Educational Decision and Effects of Families' Social Class Position: An Empirical Test of the Breen Goldthorpe Model of Educational Attainment. *European Sociological Review*, *23*(4), 505–519. https://doi.org/10.1093/esr/jcm014

Storek, J., & Furnham, A. (2014). Gender and task confidence as predictors of the Domain-Masculine Intelligence Type (DMIQ). *Personality and Individual Differences*, *69*, 43–49. https://doi.org/10.1016/j.paid.2014.05.006

Stypińska, J., & Gordo, L. R. (2018). Gender, age and migration: An intersectional approach to inequalities in the labour market. *European Journal of Ageing*, *15*(1), 23–33. https://doi.org/10.1007/s10433-017-0419-2

Sutter, M., & Glätzle-Rützler, D. (2010). *Gender Differences in Competition Emerge Early in Life* (Institute of Labor Economics (IZA) No. 5015).

Szymanski, K., & Harkins, S. G. (1987). Social loafing and self-evaluation with a social standard. *Journal of Personality and Social Psychology*, *53*(5), 891–897. https://doi.org/10.1037/0022-3514.53.5.891

Teichler, U. (2012). International Student Mobility in Europe in the Context of the Bologna Process. *Research in Comparative and International Education*, *7*(1), 34–39.

Times Higher Education. (2020). *THE World Ranking*. https://www.timeshighereducation.com/world-university-rankings/2021/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats

Tomlinson, M. (2008). 'The degree is not enough': students' perceptions of the role of higher education credentials for graduate work and employability. *British Journal of Sociology of Education*, *29*(1), 49–61.

Toncar, M. F., Reid, J. S., & Anderson, C. E. (2006). Perceptions and Preferences of Study Abroad. *Journal of Teaching in International Business*, *17*(1-2), 61–80. https://doi.org/10.1300/J066v17n01_04

Touron, D. R., & Hertzog, C. (2004). Distinguishing age differences in knowledge, strategy use, and confidence during strategic skill acquisition. *Psychology and Aging*, *19*(3), 452–466. https://doi.org/10.1037/0882-7974.19.3.452

Tucker, R., & Noakes, T. D. (2009). The physiological regulation of pacing strategy during exercise: A critical review. *British Journal of Sports Medicine*, *43*(6), e1. https://doi.org/10.1136/bjsm.2009.057562

Tversky, A., & Kahneman, D. (1989). Rational Choice and the Framing of Decisions. In B. Karpak & S. Zionts (Eds.), *Multiple Criteria Decision Making and Risk Analysis Using Microcomputers* (Vol. 75, pp. 81–126). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-74919-3_4

Tyler, J. H., Murnane, R. J., & Willett, J. B. (2000). Estimating the Labor Market Signaling Value of the GED. *The Quarterly Journal of Economics*, *115*(2), 431–468. https://doi.org/10.1162/003355300554818

Vallet, L.-A. (2007). What Can We Do to Improve the Education of Children From Disadvantaged Backgrounds? In M. S. Sorondo, E. Malinvaud, & P. Léna (Eds.), *Globalization and Education.* Walter de Gruyter. https://doi.org/10.1515/9783110191134.127

van de Werfhorst, H. G., & Hofstede, S. (2007). Cultural capital or relative risk aversion? Two mechanisms for educational inequality compared. *The British Journal of Sociology*, *58*(3), 391–415. https://doi.org/10.1111/j.1468-4446.2007.00157.x

van Houtte, M. (2004). Why boys achieve less at school than girls: the difference between boys' and girls' academic culture. *Educational Studies*, *30*(2), 159–173. https://doi.org/10.1080/0305569032000159804

Weichselbaumer, D. (2020). Multiple Discrimination against Female Immigrants Wearing Headscarves. *Industrial & Labor Relations Review*, *73*(3), 600–627. https://doi.org/10.1177/0019793919875707

Weiss, A. (1995). Human Capital vs. Signalling Explanations of Wages. *Journal of Economic Perspectives*, *9*(4), 133–154. https://doi.org/10.1257/jep.9.4.133

White, P. H., Kjelgaard, M. M., & Harkins, S. G. (1995). Testing the contribution of self-evaluation to goal-setting effects. *Journal of Personality and Social Psychology*, *69*(1), 69–79. https://doi.org/10.1037/0022-3514.69.1.69

Wozniak, D. (2011). Gender differences in a market with relative performance feedback: Professional tennis players. *Journal of Economic Behavior & Organization*, *83*(1), 158–171. https://doi.org/10.1016/j.jebo.2011.06.020

Wozniak, D., Harbaugh, W. T., & Mayr, U. (2011). The Menstrual Cycle and Performance Feedback Alter Gender Differences in Competitive Choices. *Journal of Labor Economics*, *32*(1), 161–198. https://doi.org/10.1086/673324

Wozniak, D., Harbaugh, W. T., & Mayr, U. (2016). The Effect of Feedback on Gender Differences in Competitive Choices. *SSRN Electronic Journal.* Advance online publication. https://doi.org/10.2139/ssrn.1976073

Zillman, C. (2019). *The Fortune 500 Has More Female CEOs Than Ever Before.* Fortune 500. https://fortune.com/2019/05/16/fortune-500-female-ceos/