

UNIVERSITÀ
DEGLI STUDI
DI PADOVA

University of Padova

Department of Developmental Psychology and Socialization

Doctoral School in Psychological Science

XXVI Cycle

You can't be better than me: The role of
feedback in modulating people's pursuit of
wealth

School Director: Ch.ma Prof. Francesca Peressotti

Supervisor: Ch.ma Prof. Chiara Levorato

Ch.mo Prof. Rino Rumiati

Ph.D Candidate

Andrea Pittarello

ABSTRACT (ITALIAN)	5
ABSTRACT (ENGLISH)	7
INTRODUCTION	9
 CHAPTER 1	
 THE THEORY OF SOCIAL COMPARISON PROCESSES	13
1.1 CONSEQUENCES OF SOCIAL COMPARISONS.....	14
1.2 THE DIRECTION OF SOCIAL COMPARISON	16
1.2.1 UPWARD COMPARISONS	16
1.2.2 THE CONSTRUCTION OF UPWARD COMPARISONS.....	17
1.2.3 DOWNWARD COMPARISONS	19
1.3 THE SOURCE OF COMPARISON	21
1.4 LOCAL COMPARISONS, GENERAL COMPARISONS AND THE “FROG POND EFFECT”	25
1.5 AGGREGATE AND INDIVIDUAL FEEDBACK	27
 CHAPTER 2	
 SOCIAL COMPARISONS, RANKINGS, AND SOCIAL BEHAVIOR	30
2.1 RANKINGS, COOPERATION, AND COMPETITION.....	31
2.2 PROXIMITY TO A MEANINGFUL STANDARD.....	33
2.3 DOES THE SIZE OF THE GROUP MATTER?	39

2.4 MORE IMPLICIT MEASURES: FACIAL EXPRESSIONS, RANKINGS, AND COOPERATION	44
---	----

2.5 RANKINGS, COMPETITION, AND UNETHICAL BEHAVIOR	47
---	----

2.6 RANKINGS: THEORY OR SOCIAL COMPARISON EXTENSION?	53
--	----

CHAPTER 3

STATUS, RANKING, AND SUBJECTIVE WELL-BEING	55
---	-----------

3.1 INCOME AND RELATIVE COMPARISONS	55
---	----

3.2 THE RANGE FREQUENCY THEORY	57
--------------------------------------	----

3.3 DOES HIGH STATUS ALWAYS MATTER?	62
---	----

CHAPTER 4

OVERVIEW OF THE EXPERIMENTS	68
--	-----------

CHAPTER 5

EXPERIMENT 1: ABOVE VS. BELOW THE AVERAGE	80
--	-----------

5.1 METHOD	80
------------------	----

5.1.1 PARTICIPANTS	80
--------------------------	----

5.1.2 MATERIALS AND PROCEDURE	80
-------------------------------------	----

5.2 RESULTS	83
-------------------	----

5.2.1 AMOUNT OF MONEY EARNED ACROSS BLOCKS	83
--	----

5.2.2 AMBIGUOUS TRIALS	85
------------------------------	----

5.2.3 FURTHER ANALYSES	86
------------------------------	----

5.3 DISCUSSION.....	87
---------------------	----

CHAPTER 6

EXPERIMENT 2: SECOND BEST VS. SECOND LAST..... 90

6.1 METHOD.....	90
-----------------	----

6.1.1 PARTICIPANTS.....	90
-------------------------	----

6.1.2 MATERIALS AND PROCEDURE.....	90
------------------------------------	----

6.2 RESULTS.....	91
------------------	----

6.2.1 AMOUNT OF MONEY EARNED ACROSS BLOCKS.....	91
---	----

6.2.2 AMBIGUOUS TRIALS.....	92
-----------------------------	----

6.2.3 FURTHER ANALYSES.....	93
-----------------------------	----

6.3 DISCUSSION.....	94
---------------------	----

CHAPTER 7

EXPERIMENT 3: ABOVE THE AVERAGE VS. ALWAYS FIRST..... 97

7.1 METHOD.....	97
-----------------	----

7.1.1 PARTICIPANTS.....	97
-------------------------	----

7.1.2 MATERIALS AND PROCEDURE.....	97
------------------------------------	----

7.2 RESULTS.....	98
------------------	----

7.2.1 AMOUNT OF MONEY EARNED ACROSS BLOCKS.....	98
---	----

7.2.2 AMBIGUOUS TRIALS.....	100
-----------------------------	-----

7.2.3 UNETHICAL BEHAVIOR.....	101
-------------------------------	-----

7.2.4 FURTHER ANALYSES.....	103
-----------------------------	-----

7.2.5 MEDIATION ANALYSIS.....	103
7.3 DISCUSSION.....	104
CHAPTER 8	
GENERAL DISCUSSION.....	110
8.1 FUTURE DIRECTIONS.....	116
8.2 CONCLUDING REMARKS	119
REFERENCES	121

Abstract

Obiettivo di questo lavoro è investigare l'effetto di diverse fonti di confronti sociali sulla tendenza delle persone a massimizzare i profitti di fronte a situazioni ambigue. Sulla base della teoria del confronto sociale (Festinger, 1954), e sviluppati intorno ai suoi recenti sviluppi (Buckingham & Alicke, 2002; Garcia, Tor, & Gonzalez, 2006; Garcia & Tor, 2007), tre esperimenti sono stati costruiti con l'obiettivo di manipolare lo status sociale dei partecipanti in relazione ad altri simili. A tal fine, si sono confrontate due differenti modalità di comunicazione dell'informazione relative allo status sociale. L'Esperimento 1 adotta un feedback *aggregato*, e confronta la tendenza ad approfittare di situazione ambigue, ovverosia situazioni nelle quali è possibile scegliere differenti ricompense, da parte di partecipanti costantemente sotto e sopra il punteggio medio di un gruppo di riferimento. L'Esperimento 2, costruito sulla base dell'esperimento 1, adotta invece un feedback *relativo* (ranking), e confronta il comportamento economico di partecipanti sempre in seconda posizione con quello di partecipanti sempre in penultima posizione all'interno di un gruppo di altri quattro studenti. Infine, il terzo esperimento, mantenendo la stessa struttura dei precedenti, confronta in modo diretto feedback *aggregato* e *relativo*, andando a paragonare il comportamento economico di partecipanti costantemente sopra la media e sempre in prima posizione. Inoltre, l'Esperimento 3 testa un possibile mediatore della relazione tra differenti tipi di feedback e la tendenza alla massimizzazione dei guadagni. Nel complesso, i risultati dimostrano che quando non sono fornite informazioni relative ad altri individui specifici, partecipanti sopra la media tendono ad approfittare in misura minore di situazioni ambigue rispetto a coloro sotto la media (Esperimento 1). Tuttavia, quando sono fornite informazioni più precise e dettagliate in relazione allo status all'interno di

un gruppo (*ranking*), misure di confronto aggregate non vengono più prese in considerazione. Partecipanti sempre in seconda e in penultima posizione (Esperimento 2) e sempre in prima posizione (Esperimento 3), non solo dimostrano di approfittare di situazioni ambigue, ma allo stesso tempo infrangono le regole con l'obiettivo di guadagnare una somma di denaro maggiore. Infine, l'Esperimento 3 dimostra che la precisione dell'informazione relativa alla posizione nei confronti di altri simili, spiega la differente tendenza alla massimizzazione dei profitti tra partecipanti sopra la media e sempre in prima posizione. Il contributo di tale lavoro è duplice. Da un lato estende la teoria del confronto sociale (Festinger, 1954) e quella sui ranking (Garcia et al., 2006) in ambito economico, mostrando come differenti sorgenti di confronto sociale non solo promuovono comportamenti competitivi, ma influenzano anche la tendenza ad interpretare situazioni economiche ambigue a proprio vantaggio. In secondo luogo, i risultati emersi nei tre esperimenti suggeriscono che identificare la modalità corretta di comunicare performances raggiunte rappresenta un fattore delicato, che se utilizzato in modo errato può alimentare comportamenti dannosi all'interno di gruppi e organizzazioni.

Abstract

Goal of this present work is to investigate the effect of different sources of social comparison on people's tendency to maximize their payoff when facing ambiguous situations. Based on social comparison processes theory (Festinger, 1954) and on its more recent developments (Buckingham & Alicke, 2002; Garcia, Tor, & Gonzalez, 2006, Garcia & Tor, 2007), three experiments were built with the goal of manipulating participants' social status compared to similar others. To this purpose, I adopted two different ways to communicate participants' information about their standing.

Experiment 1 adopts *aggregate* feedback and compares the tendency to take advantage of ambiguous situations, namely, scenarios in which it was possible to select among different payoffs, between participants scoring consistently above and below the average score of a reference group. Building on Experiment 1, Experiment 2 adopts *relative* feedback (ranking), and compares the economic behavior of participants' ranking consistently second-best to that of participants ranking second-last within a group of five students. Lastly, Experiment 3, built on the previous two experiments, directly compares *aggregate* and *relative* feedback among participants ranking above the average and always in first position. Furthermore, Experiment 3 tests a possible mediator of the relationship between different feedback and participants' tendency to maximize their earnings. To summarize, the results emerged across the three experiments demonstrate that when information about specific others' performance is not provided, participants ranking above the average exploit ambiguous situations to a lower extent compared to participants scoring below the average (Experiment 1). Yet, when precise and detailed information about individuals' positions within a group is specified (*ranking*), aggregate sources of comparisons are no longer taken into account. Participants always in second position and in fourth position (Experiment 2), not only

exploited ambiguous trials, but also exhibited unethical behavior to increase their total payoff. Lastly, Experiment 3 explains how participants ranking always first and above the average differ in their tendency to maximize their earnings. The contribution of this work is twofold. On the one hand, it extends literature on social comparisons (Festinger, 1954) and rankings (Garcia et al., 2006) in the economic domain, showing that different source of feedback prompts not only competition but also the exploitation of grey areas. On the other hand, the results described in the three experiments suggest that identify the correct way to communicate performances is important and represents a delicate factor, that if not used appropriately can foster negative behaviors within groups and organizations.

Introduction

What are the keys to happiness and well being? Following the results of an extensive survey carried out by Cantril in the early '60s, the economist Richard Easterlin investigated what people themselves reported when asked what made them happy. Despite the broad and open-ended nature of this question, most of the concerns emerged showed a similar pattern across different countries and cultures. People named health, happy family life, job satisfaction as well as material things among the factors capable of affecting happiness (Easterlin, 2004). One of the most mentioned factors was money. In particular, people thought that having more money should make them feel better. Despite the economic view would support this claim, Easterlin suggested that this assumption does not hold true in everyday life (Easterlin, 1974; 1995). The paradox is that, if a person's income increases, while everyone else's stays the same, he would actually feel better off compared to other people. Yet, if the same person's income stayed the same, while everyone else's would increase, then this person would feel worse off, even though his standard of living has not, in fact, changed at all.

What is important here, and for the purpose of this work, is that perceived wealth does not depend on objective, thus absolute, evaluations. Rather, it depends on the comparisons with relevant others (Carlsson, Johnasson-Stenman, & Martinsson, 2003; Easterlin, 1974, 1995). According to the social comparison processes theory (Festinger, 1954), individuals spontaneously and unintentionally (see Gilbert, Gisler, & Morris, 1995) compare to similar others on different dimensions. For example, people can compare themselves with others on how many friends they have, the neighborhood they live in, their average GPA, as well as their material possessions. In modern societies, income and personal asset represent a relevant facet of comparison, and allow

for individuals' evaluation of their standing in the social hierarchy (Adams, 1963; Messick & Cook, 1983). This is particularly important, given that, higher achievements and high status are heavily weighted within groups (Carlsson et al. 2003), and high status represents prominence, dominance, and respect (Ivanic, Oversbeck, & Nunes, 2011). Comparisons with similar others affect and shapes people's social identities (Turner, Oakes, Haslam, & McGarthy, 1994), and influence feelings of well-being and aspirations (Suls, Martin, & Wheeler, 2002). These processes have an impact on people's behavior. No one wants to perform or achieve less than someone else and feels like a 'loser'. For instance, a student may decide to take extra classes to increase her GPA, a researcher could give up her summer breaks to write a research article and increase her publications, or a car seller could work extra time during the weekend to sell more and try to be among the top sellers in the company. This motivation to reduce the discrepancy between a current status and those of others affects social behaviors as well. If a person perceives her wealth as inferior to her colleagues, she can try to explore possible solutions to get richer, like reducing her total tax liability, and enjoy a lifestyle she could not afford otherwise.

Another important repercussion of this effect concerns people's economic behavior over time. Comparisons with others affect aspirations, and research showed that people adopt the achievements of others as reference points to set their own goals (Rick & Loewenstein, 2008; Zell & Alicke, 2009a; 2009b). Furthermore, research showed that relative comparisons, rather than absolute, are more important in affecting the perception of one's standing in the society (Helson, 1964; Parducci, 1968). While an individual strives to increase her income, or material possessions, others' incomes will increase as well, as all individuals also endeavor to reach a better status (Anderson, Kraus, Galinsky, & Keltner, 2012).

This reasoning is clearly supported by the hedonic treadmill model (Brickman & Campbell, 1971), which states that individuals' effort to increase happiness is doomed to failure (Diener, Lucas, & Scollon, 2006). More specifically, the model states that people, after reacting to good or bad events, quickly adapt back to neutrality. It derives that individuals will continue to pursue happiness and well-being because "they incorrectly believe that happiness lies just around the corner in the next goal accomplished" (Diener et al., p. 305). It follows that, in the social context, when evaluating their possessions, income or achievements, individuals will constantly engage in different comparisons as their status increases or decreases over time. Put it simply, a person can perceive herself as not too rich within a group of rich people or not so poor within a group of poor people.

While previous work explored social behaviors such cooperation and competition as consequences of social comparisons and people's perception of their standing within a group (Chen, Myers, Kopelman, & Garcia, 2012; Garcia & Tor, 2007; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2009), I aim to explore whether and how this applies to the exploitation of economic situations and ethical behaviors, such as lying and cheating. This is particularly relevant in our society, where on many occasions taking advantage of unclear scenarios helps people to increase their achievements and standing among peers. Previous work examined the effect of social comparisons on joint profit maximization, where choosing to either cooperate or compete affected both participant and rival's outcome. For example, studies showed that participants forgo a significant increase in their status when cooperate would allow their rival to surpass them in the social ranking (Garcia & Tor, 2007). My contribution extends these findings to the economic domain, in situations in which participants' pursuit of status did not affect others.

The remainder of this work unfolds as follows: chapter one will describe the social comparison processes theory (Festinger, 1954). I will also discuss the distinction between upward and downward comparisons, as well as their consequences on people's self-enhancement. Chapter two will consider the role of rankings and their consequences on behavior. Particular attention will be given to social behaviors as cooperation and competition (see Garcia & Tor, 2006) and their practical implications on real life contexts. Chapter three will illustrate the relationship between rankings, status and their effect of subjective well-being, while chapter four will introduce the three experiments on which I build this work, suggesting how research on social comparisons and ranking can apply to the study of the pursuit of wealth. The structure, the method and the main hypotheses will be presented.

Chapter five, six and seven will respectively describe the first, the second and the third experiment. The general discussion will be presented in chapter eight, as well as an analysis of this project limitations and future research required to extend the present findings.

Chapter 1

The Theory of Social Comparison Processes

The core tenet of the social comparison theory (Festinger, 1954), posits that individuals have the tendency to evaluate their opinions and abilities. This process is important, as it provides information about what a person is capable of and allows for a better understanding of her skills. Obtaining this information requires a standard, that is, an objective value that serves as comparison. For instance, we can ascertain the validity of our opinion by reference to the physical world (Festinger, 1954), or we can infer our ability on a math task by comparing our answers to the correct ones.

However, on many occasions, objective means and benchmarks are not available, causing evaluations to be unstable. Evaluating whether a performance is good or not could be very difficult. Although individuals can still adopt their self as cognitive reference point (Rogers, 1981), for instance by comparing their latter grade in a class to their previous, when stable non social means are present, people compare on a specific dimension to others. Yet not all the ‘others’ are perceived as equally relevant, and only individuals similar to the self represent a reliable source of comparison (Taylor & Lobel, 1989).

Goethals and Darley (1977) extended this concept, suggesting that more precise evaluations occur when the other person possesses similar attributes relevant to the dimension of comparison. For example, a student would be more likely to evaluate her academic performance by comparing her average GPA to that of others similar in age, education and sex. The notion of similarity is linked to another principle of Festinger’s theory, which is the discrepancy between the individual and the social target. The discrepancy is function of the perceived distance to the relevant other; the more this

distance increases, the less the comparison is useful to the self. What outlined so far highlighted the cognitive nature of the theory, showing why, how, and with whom people compare themselves. However, these processes have important behavioral implications that will be discussed in the next section.

1.1 Consequences of social comparisons

Festinger originally emphasized the need for self-evaluation as the main purpose behind his theoretical approach, suggesting the importance of similar others in shaping precise and stable judgments about one's abilities, skills and opinions (Wood, 1989). An important implication of this assumption, is that people take actions to reduce the discrepancy between themselves and relevant others. These actions, or strategies, have different functions: at the *intragroup* level they favor uniformity in the group, while at the *intrapersonal* level they promote self-improvement and self-enhancement.

At the intrapersonal level, work by Atkinson, Raynor, and Birch (1974) and Bandura (1986), found that individuals strive to improve their abilities, and research by Button, Mathieu, and Zajac (1996) demonstrated that this occurs both with learning goals and performance goals (see also Elliot & Harackiewicz, 1994). Another factor that pertains to the intrapersonal level is the tendency to protect and enhance people's self-esteem (Brown, Novick, Lord, & Richards, 1992; Wilson & Brenner, 1971; Wood, 1989). Both self-improvement and self-enhancement suggest that the evaluation of abilities is not the exclusive factor driving social comparisons, and that the broad range of the theory can account for different dynamics of people's social behavior.

One of the oftentimes less recognized aspects of the theory, is that less importance is given to the environment people live in. Although Festinger (1954) acknowledged the role of the context in which comparisons occur, it is important to notice that the social

environment can actively affect people's perception of skills and performance, with strong influence on subsequent behavioral responses. Referring to Pettigrew and the "campus as a frog pond" effect (Pettigrew, 1967, p. 257), Wood (1989) illustrates that a student who received high grades in a college where it is easy to earn high grades will tend to have higher aspirations than an equally good student attending a more challenging school. Such example is also in line with what was reported at the beginning of this work. We must recognize the importance of relative rather than absolute benchmarks (see also Marsh & Parker, 1984). This last point is corroborated by research on relative deprivation (*for a review see* Smith, Pettigrew, Pippin, & Baiosiewicz, 2012), which states that people evaluate the satisfaction with their outcomes not in absolute terms, but with the relevant standards within a group (Messé, & Watts, 1983). Highlighting the behavioral consequences and implications of the social comparison theory is pivotal in the present work for two reasons. First, it recognizes the importance of the social context, and, more importantly, the dynamic environment in which comparisons occur. Second, it allows for a better understanding of the effect of relevant others on individuals' goals. In western societies, being better than others is important (Collins, 1996; Festinger, 1954; Taylor & Brown, 1988), especially when the comparison occurs on dimensions perceived as salient (Wood, 1989). Feelings of superiority affect self-esteem (Brown, 1986; Campbell, 1986; Morse & Gergen, 1970), well being (Affleck & Tennen, 1991; Crocker & Gallo, 1985, Gibbons, 1986), and aspirations (Lockwood, Jordan, & Kunda, 2002). Therefore, individuals can adopt different strategies when choosing similar others to compare with. For example, people can make comparisons with others who are inferior or less fortunate than the self, or, on the contrary, they can choose to make comparisons with others who are in a better position.

1.2 The direction of social comparison

Although sometimes comparisons are forced by the context and by specific circumstances (Wheeler & Miyake, 1992), the theory depicts the individual as an active agent in choosing whom to compare with (Wood, 1989). More specifically, further developments of Festinger's original formulation suggest that the discrepancy between one person and the social target can be construed in different ways. Individuals can adopt different strategies to accomplish their goals, be they self-evaluations, self-enhancements or merely more material goals such as relative income and subjective well being among peers (Hagerty, 2000). People can direct their attention either towards individuals who are better off, by selecting an *upward comparison* or, towards individuals who are worse off, a *downward comparison*.

1.2.1 Upward comparisons

Comparisons with others who are better off on a relevant dimension are defined *upward* comparisons. In the early definition of the theory, Festinger (1954) stated that the tendency to outperform others was intrinsic in nature, and people constantly compared with better others to set goals and higher achievements.

Research on upward comparisons led to inconsistent results. Early research seems to emphasize positive consequences of upward comparisons. For example, Thornton and Arrowood (1966) suggested that they positively affect self-enhancing tendencies. In the same year, Wheeler (1966) demonstrated that, after receiving a false feedback on a task, participants were permitted to view the score of another participant in the same group. A total 87% of their participants chose to view the score of a better off individual, and, among these participants, 75% reported their performance to be close to the target. Wheeler (1966) concluded that upward comparisons do not represent

a threat; rather, they are adopted to confirm that one is among the “best achievers”. A few years later, Nosanchuk and Erickson (1985) reported data from 544 professional bridge players who were asked with whom of the other players they would like to compare in different scenarios. Across eight different situations, participants were more likely to compare with superior targets, thus corroborating the assumption of a spontaneous disposition toward upward comparisons.

On the other hand, further developments of the theory revealed negative side effects of upward comparisons. Morse and Gergen (1970) showed that participants waiting for a job interview reported a lower level of self-esteem when the other candidate in the room was well kempt and competent (Morse & Gergen, 1970), and higher self esteem when the candidate looked dirty and was wearing smelly clothes. Past research has also highlighted the drawback of comparing with others who are better off, since such comparisons are considered painful for people’s self-concept (Gibbons, 1986; Major, Schiaccitano, & Crocker, 1983; Wheeler, & Miyake, 1992).

However, there are circumstances under which people may actually benefit from these comparisons. For instance, a woman following a diet can hang pictures of skinnier persons on the fridge, as a guide to healthier eating and lifestyle (Helgeson & Taylor, 1993), or a soccer player can be inspired by his favorite professional athlete without perceiving any threat.

1.2.2 The construction of upward comparisons

What outlined above revealed an inconsistent pattern of results concerning the effect of upward comparisons. Early theorists argue for their positive effect on self-enhancement and in boosting aspirations and self esteem, while more recently, scholars highlighted their ego-deflating functions. Collins (1996) integrated these different areas

of research, suggesting *when* and *how* others who are better off lead to positive consequences for the self.

For instance, Helgeson and Taylor (1993) provided an example that clarifies this concept. The picture of a skinnier model on the fridge can either instill aspirations and positive feelings or represent a threat to the self. What leads to one result or the other? Collins (1996) suggested that the *way* people construe different comparisons affect the impact that the comparison itself could have on the individual. The focus here is on the cognitive dimension of social comparisons, and on individuals' expectations (Collins, 1996). In recalling the previous example, the *way* a person construes the picture of the model on the fridge affect her reactions. Positive self-evaluations and self-enhancement occur when the person is recognized as not similar. On the contrary, if the model is perceived as a peer, such comparison is more likely to negatively affect one's self-esteem (Wood, 1989).

Drawing on previous research, Collins (1996) suggested that expectations affect the consequences of upward comparisons. More specifically, expecting to be similar to relevant other causes assimilation, whereas expecting to be different causes contrast (Manis & Paskewitz, 1984). Both assimilation and contrast lie on the assumption of *closeness* (Mussweiler, R  ther, & Epstude, 2004) and concern with the way the distance between a person and a social target is interpreted. Assimilation is triggered when the individual holds the belief that he could obtain the same status as the target (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Lockwood & Kunda, 1997; Suls et al., 2002), and elevates self-worth placing the individual in the target's superior group (Collins, 1996). On the contrary, when the perceived distance is greater, contrast is more likely to occur, causing negative consequences for the self. Beside people's motives to control the comparison process, another host of factors affect consequences

of upward comparisons. By providing data from different studies, Collins (1996) showed that people with higher chronic self-esteem were more likely to report positive effects of upward comparisons on mood (Aspinwall & Taylor, 1993; Gibbons & Gerrard, 1989). In addition to self-esteem, scholars showed that providing information about better off relevant others triggered positive affect, whereas the same information about stranger did not affect emotional reactions (Tesser, Pilkington, & McIntosh, 1989). Lastly, perceived control has been demonstrated to prompt positive mood variations. In one experiment, Testa and Major (1990) revealed that participants who were led to believe that they had the means to improve their performance were more likely to report lower level of depressive and hostile affect.

1.2.3 Downward comparisons

The literature on upward comparisons seems to suggest that people prefer to compare with better off similar others. Further, factors like self-esteem, perceived similarity and control, positively affect goals, aspirations and mood. Yet, Wills (1981) proposed that people can also infer evaluations and increase their well being from those who are worse off, thus making downward comparisons.

Comparisons with others do not represent 'passive' processes in which the individual is forced to direct the attention either toward a specific target or the other. Rather, as Collins (1996) suggested, people are active agents, capable of choosing adequate coping strategies to adapt to the environment as well as to preserve their self worth. As much as individuals can construe and interpret the similarity toward a better off other to increase aspirations and well-being, they can create and elaborate worse-off comparison target to improve their self evaluations (Buunk, Oldersma, & DeDreu

2001). Again, the concept of motivation (Collins, 1996) is important to define the direction of the comparison.

Hackmiller (1966) has been the first to introduce the notion of downward comparison. In a study, participants were asked to take a personality test assessing “hostility towards parents” where higher scores indicate higher hostility. Results showed that 95% of participants who were told that they obtained a higher score on the test were more likely to select downward comparisons, thus comparing to participants who obtained a lower score. More interestingly, those who were told this measure represented a negative characteristic, made even more downward comparisons (Hackmiller, 1966). In the same year, Thornton and Arrowood (1966) demonstrated that participants who were told they had high negative personality trait made more comparisons with worse off participants. Following this line of research, Wills (1981), as a core assumption of his downward comparison theory, suggested that one of the most important causes leading to these kind of comparisons is the perceived threat to people’s self-worth (see also Collins, 1996).

In line with this assumption, people actively choose worse off target to increase their well-being. For example, in a study on breast cancer patients, Wood, Taylor and Lichtman (1985) found that participants seemed to benefit from comparison with less fortunate patients. Suls, Martin and Wheeler (2002) suggested that these comparisons might be adopted to help patients, given their positive effects.

Buunk and colleagues (2001) suggested that choosing such comparisons could contribute to a better perception of one’s status and situation. Work by Jensen and Karoly (1992) showed chronic patients benefit from the exposure to worse off peers reporting lower depression, and Buunk and Ybema (1995) found that individuals who compared their situations with worse others reported higher satisfaction one year later.

In the health domain Affleck, Pfeiffer, Tennen and Fifield (1987) examined the role of downward comparisons among patients with rheumatoid arthritis, among persons with mental retardation (Gibbons, 1985), and bulimics (Gerrard, Gibbons & Sharp, 1985).

The health domain does not represent the only field in which people experience benefits by comparing themselves to less fortunate others. For example, people who experience job disruption (Pearlin, Lieberman, Menaghan, & Mullan, 1981), and marital conflict (Menaghan, 1982) bear support for the positive benefits of downward comparisons.

1.3 The source of comparison

What outlined so far clearly demonstrated the social impact of Festinger's theory. The main assumption is that people need to evaluate their opinions and their abilities, and in doing so they seek comparison with others who are not too divergent from themselves, that is, people they can compare with on similar dimensions (Festinger, 1954; Wood, 1989). I illustrated how the agent plays an active role in selecting the comparison target, and in doing so he selects relevant others who are better off or worse off, according to his competing needs. Collins (1996) suggested that upward comparisons have positive effects on self worth, while Wills (1981) argued that comparison with less fortunate others may serve self-enhancement motives, increase self-esteem and reduce stress (Crocker & Gallo, 1985; Gibbons, 1986). Although past literature warns that drawing straightforward conclusions on the specific effects of downward and upward comparisons is not possible, it should be safe to argue that more general self evaluations derive from comparisons with worse off others.

Research exploring the effect of different sources of comparison is scarce (Marsh, Trautwein, Lüdtke, & Köller, 2008). More specifically, Marsh and colleagues

(2008), noticed that “the historically important construct of generalized others” (p. 512) has not received enough attention, and exploring the consequences of this source of comparison has potential in understanding people’s behavior. Buckingham and Alicke (2002), claim the understanding where the comparison comes from is important, mostly because several real life situations entail feedbacks arising from *specific* individuals as well as from “*aggregate statistical information*” (p. 1117).

For instance, a student can evaluate her score on a test by comparison with other peers in the same class, or, on the other hand, she may compare it to the average performance of a specific referent group. In real life, applicants seeking to enter graduate schools do not compare their scores on the GRE or the GMAT with the other applicants, or with specific students who undertake the same tests in previous sessions. Rather, what is important is their percentile scores compared with the average score obtained by a larger sample on the same test in the last 12 months.

In the workplace, employees can receive information about the average salary of colleagues, or in academia, researchers can compare their number of publications with the average articles published by faculty in the same department. Klein (1997) was the first to highlight the effect of an aggregate reference point. In a series of study the author investigated participants’ self-evaluations when their scores in an aesthetic test were experimentally manipulated. In one condition participants were told that they scored above the group average, whereas in the other condition participants were told that their scores were below the average. Klein (1997) noticed that participants reported more favorable self-evaluations when they were led to believe that their score was better than the average. Further, participants in the “better than the average” condition were also more likely to continue with the task. What is even more relevant is that aggregate comparison (the average) had more influence than participants’ numerical scores.

Following Klein (1997), Buckingham e Alicke (2002) ran several studies to investigate the role and the effect of individual and aggregate social comparison on people' self-evaluations. The authors wondered whether the relevance of the aggregate feedback could replace the influence of the individual comparison.

As a starting point the authors claimed that aggregate (average) feedback is more informative than individual feedback, and this is because the former is based on a larger sample (Buckingham & Alicke, 2002). It follows that the more informative the feedback is, the more accurate the evaluation of one's ability will be. This is in line with Festinger's original formulation, when he stated that people strive to obtain stable and precise information about themselves (Festinger, 1954).

If average feedback is more informative and people draw more affective reactions from being either better or worse than the average, then, it seems reasonable to believe that it can have greater potential in affecting also behavioral responses. Isen (1970) showed that participants who scored above the norm on different tasks donated more money than those whose scores were below the norm. Although interesting, these results did not include a condition in which participants received feedback about a specific target. Klein (2003) investigated this effect in two studies, measuring people's disposition to help others in solving a word completion task (the "Hangman"). Participants could choose among five different hints that varied in difficulty, and helping behavior was assessed with the number of hard or easy hints that were given to help the other in solving the game.

Results showed higher helping behavior and more positive affective reactions among those who received comparative positive feedback. In a second study, Klein (2003) had participants compare their scores in an unrelated task with 1) another participant, or 2) the average participant. Adopting the same experimental procedure as

in Study 1, the author showed that, again, those who receive positive feedback were more likely to give easier hints. More interestingly, when participants compared their score with the average participant, the disposition to help was even stronger (Klein, 2003).

On the contrary, comparing their scores to objective standards (i.e. a specific person) did not increase prosocial tendencies. The author concluded that comparisons with the “average” are more informative, exert greater effect on behavior, and increase positive affective reactions. Such findings are important because they extend previous work on social comparison processes, showing that people draw significant meanings and evaluations even when objective information is absent, thus contrasting previous assumptions by Festinger (1954).

Perloff and Fetzer (1986) explored how specific and more vague target affected participants’ judgments of vulnerability. In two studies the authors revealed that participants perceived themselves as less vulnerable when compared to ‘average others’, than when comparison were made with specific social target. Further, they concluded that the ambiguity of more general feedback led participants to select downward comparisons, suggesting that this strategy allowed for a more favorable perception of their status, increased well-being and self-enhancement (Wills, 1981).

Recently, Bruchman and Evans (2013) extended the effects of global and individual comparison on people’s self-evaluations by proposing that different mindsets can moderate the relationship between the source of information and individuals’ ratings of satisfaction in a task. Adopting the construal level theory framework (Liberman & Trope, 1998), these authors showed that participants primed to think about *why* they should carry out specific behaviors were more likely to express greater satisfaction and more positive self evaluations when led to believe that they were

performing better than the average. On the contrary, when primed to think in a more concrete way about the same behavior, participants did not exhibit differences in evaluation ratings when provided specific or average feedback (Bruchman & Evans, 2013).

1.4 Local comparisons, general comparisons and the “Frog-Pond Effect”

Previous work by Buckingham and Alicke (2002) suggested that aggregate source of comparisons (i.e. comparisons with the mean) are more informative, and represent a more diagnostic source of information for participants’ self-evaluations. These comparisons are also defined ‘global’, opposed to those in which a person compares with single others, defined as ‘individual’. Klein (1997), in a series of studies showed that participants who were led to believe that they were scoring above the average reported more favorable self-evaluations than did participants who scored below the average. Although social comparison theory (Festinger, 1954) has never explicitly highlighted the difference between individual-other and global-other as source of information, on many occasions people are exposed to different available social targets that can be adopted as reference standard for skills, opinions and abilities. Gilbert, Gisler and Morris (1995), argue that the spontaneity of the comparison processes can prompt people to compare their abilities and performances with any target available. This is important because it recognizes the active role of the agent, especially when the environment imposes specific constraints to social comparisons. In some circumstances people may compare their standing within a relatively small group of peers, whereas in other situations the comparison may involve a larger number of individuals. Alicke, Zell and Bloom (2010) illustrate an example of how the size of the group can affect individuals’ evaluation of their abilities. Consider the example of a

student who ranks in the middle of a group of 10 other students. Now, suppose that this student, with the same grade, compares her performance within two different groups of 5 students. In the first group, her score places her at the bottom of the ranking, whereas in the second group the same score places her at the top of the ranking. In these situations she looks at her same performance in two different ways (being the best vs. being the worst) drawing different evaluations of the same score depending on the reference points available in the environment.

Alicke and colleagues (2010) investigated these possible scenarios in one experiment. Their research question aimed to understand whether comparison with smaller group have stronger influence on individuals' self evaluations than comparisons with larger samples. Participants were categorized into one of two 5-persons groups. Students in one group sat on the left side of the room, whereas those in the other group sat on the right side of the room. Then they received false feedback about their performance on a lie detection task. More specifically, they were told that they ranked 5th, 6th or 10th among the ten students in the room, and asked to evaluate their performance. Then some participants were given additional information that they ranked best or worst in their 5-student group.

Results showed that those who were led to believe they ranked 5th or 6th among the ten students in the room did not show differences in their evaluations. Yet, those who ranked 6th but were also told that they performed best in their 5-student group reported higher evaluations than those who ranked 5th but were informed that they were the worsts in their 5-student group.

The findings of this study showed a paradoxical situation in which ranking as 6th in a group turned out to be better than occupy the 5th position. This is because comparisons within one's reference group receive greater weight and are more

informative than broader comparisons. The authors recognized that drawing more attention from a smaller sample is also in line with previous research stating that people are less sensitive to large numbers and base rates (Kahneman & Tversky, 1973). However, relevant to the purpose of this work, is important to highlight that the size of the source of information affects individuals' evaluation of abilities.

1.5 Aggregate and individual feedback

Thus far I reviewed evidences suggesting that people can compare to different others, and can evaluate their performance within either smaller or larger group of peers. Yet, the findings discussed yield different predictions and consequences on people's behavior. Following Klein (1997), comparison with an average performance represents a more diagnostic source of information as it entails feedback about a larger sample. At the same time, authors like Borgida and Nisbett (1977) showed that sometimes people underestimate aggregate data. To clarify this point, Buckingham and Alicke (2002), suggested that, when single individuals are present, comparison with larger sample are less informative. Their assumptions were tested in a series of studies, in which self-ratings of ability and performance were compared across different experimental conditions. In study 1, the authors showed that evaluations of performances on a lie detection task were only affected by the presence of a single target, even though base rate information was provided, whereas when no specific individual was present, participants' evaluations were more affected by aggregate information (study 3 and study 4). In the fifth study the authors created two experimental conditions in which participants ranked either above or below the average, and took a lie detection task either alone or with another individual in the same room. While in the previous studies it has been shown that the effects of aggregate and

individual reference others affected ratings of abilities and performance differently, in this study participants had to evaluate only their performance on the test. The rationale was that, given the objective nature of the measure to evaluate, the aggregate score was supposed to exert greater influence on participants' rating (see Klein, 1997 for a similar argument).

Results of this study revealed that when the ratings regard specific and objective measures, in this case the specific performance on a lie detection task, the presence of a single other had no influence on participants' responses. In line with previous work (Klein, 1997), these findings demonstrated that aggregate and global comparisons represent the most influential source of feedback.

This is particularly relevant and has strong real life implications. Social identity theory (Tajfel & Turner, 1982), states that people define their identities at different levels, from a purely individual perspective to a broader definition of themselves as member of a specific group. These categorization processes are based on similarities between the single individual and the other members, and are responsible for several social behaviors such as influence (Asch, 1951), leadership (Hogg, van Knippenberg, & Rast, 2012), and prejudice (Reynolds, Haslam, & Turner, 2012).

Understanding when and to whom people compare themselves is paramount in the social context. Different frames can easily lead to misrepresentation of one's performance or ability in a task and in the workplace, or to a distort evaluation of one's standing among the other employees. In the economic domain such effect is even stronger, as oftentimes individuals do not compare their wealth in absolute values, but relatively to the wealth of the group they belong. As a consequence, their perception of happiness and wellbeing can be biased by their position in the social hierarchy. By virtue of its social nature, Festinger's theory and its more recent developments can be

adopted to study different social behaviors, especially in the economic domain. In the next chapter I will review literature suggesting how distinct rankings affect cooperation and competition (Garcia, et al., 2006).

Chapter 2

Social Comparison, Rankings, and Social Behavior

In the earliest formulation of the social comparison theory, Festinger (1954) stated that the tendency to outperform others is intrinsic in nature, and individuals look at better others to set higher goals and achievements. However, research also showed the negative effects of comparing with better others and the ego deflating influence of those comparisons on people self evaluation and self esteem (see Collins, 1996). Previous work explored the effect of these comparisons on individual dimensions. For instance, scholars showed that comparing to better others produced jealousy (Salovey & Rodin, 1984), hostility (Testa & Major, 1990), frustration (Martin, 1986) as well as lower self-evaluation tendencies (Morse & Gergen, 1970). Yet, less has been done in exploring the consequences of upward comparisons on people's behavior.

Although Festinger (1954, p. 126) suggested that upward comparisons affect competition and cooperation, these behaviors were interpreted as a tendency to reduce the discrepancy among "better" and "worse" members of the same group. An early study by Greenberg (1932) revealed that children were more willing to help worse off peers in a game where they were asked to build objects out of stones. However, the author concluded that helping behavior was not an altruistic act in nature, rather an indirect form of competition and a strategy that better off kids adopted to display superior skills. Similarly, Hoffman, Festinger and Lawrence (1954) showed that when one participant in a group of three started to perform considerably well in a task, the other two participants acted to prevent him to acquire additional points. Several factors affect competition in the social comparison domain. For example, Garcia and Tor (2007) suggested that *relevance*, *commensurability* and *closeness* foster competitive

behavior. Tesser (1988), and Beach and Tesser (2000) showed that comparisons with better others increase competition when the dimension is relevant to the self and the social target (Tesser & Smith, 1980). Lastly, building on the principle of similarity, Jones and Rachlin (2006) illustrated that the amount of money a person was willing to forego in order to benefit someone else was affected by perceived closeness between them.

Exploring cooperation and competition as a function of different kind of comparisons is relevant in modern societies. From the educational setting, to more complex workplace behaviors, both in macro and micro economic domains, people interact with others, and these interactions have a strong effect on social behaviors. Whether employees are asked to work in teams with other peers, or firms compete to acquire a greater market share, it is clear that these behaviors do not occur in a vacuum. When deciding whether to engage a joint venture with another nonprofit organization, a CEO will not only look at the joint final outcome, but he will consider whether the other organization is better or worse off, and how the venture can influence the standing of his firm in the market. Similarly, a student will be more or less willing to cooperate in a team class project to the extent that the final grade will affect not only her performance but also her status in the class.

What outlined above highlights the importance of understanding with who people compare themselves, but, more importantly, shows that different behaviors can arise according to how people perceive their *ranking* in the relevant group.

2.1 Rankings, cooperation and competition

The role of the social environment in influencing behaviors is important, because on many occasions individuals are included in or may perceive themselves as part of

rankings elaborated along several different dimensions. For example, a student can be the top ranked in her class, or an athlete can be the last in his age group when running a 5 kilometers road race. Rankings are pervasive in modern societies. Every year the global business magazine *Fortune* lists the largest 500 corporations in the United States based on their gross revenues, the *Financial Times* ranks the most prestigious MBA programs, and the business magazine *Forbes* lists the richest American businessmen. Rankings can also become hierarchies that spontaneously arise on many occasions and in different domains.

Although research seems to suggest only a weak correlation between subjective well-being and high standing in the social hierarchy (Diener, Suh, Lucas, & Smith, 1999), it has been recognized that high status represents prominence, dominance, and respect (Ivanic, et al., 2011). For this reason it is reasonable to believe that individuals strive to be among the top students in the class, or the wealthiest among their peers. The concept of ranking is not new in the research on social comparison. Wheeler and colleagues (1969) adopted for the first time a rank order paradigm across different experimental studies. Participants were divided in small groups and had to take a test. After completing the test they were given false feedback about their performance. At the end of the session they were asked whether they would like to view another participant's score. Results revealed that the majority of participants chose to compare their performance to the score of better others. Interestingly, participants chose to view the top scorer and, only at the end, the score of the last ranked participant (Thornton & Arrowood, 1966).

In these studies the concept of ranking was not directly manipulated, yet it is worth noting that when given the opportunity to view another participant's score, individuals chose not only better others, but the top and the last ranked in order to

acquire information about the overall range of others performance. In turn, this information enabled them to judge their standing more precisely. The rank order paradigm was used to study to whom participants would compare in an experimental setting (Suls & Wheeler, 2000; Wheeler, 1966), however no insight was provided to understand how comparing to the top or the last scorer affected participants' behavior.

The tendency to compare to the top is premised on the “existence of an obvious, and ubiquitous standard, namely, the top” (Garcia, et al., 2006). Following this rationale, Garcia and colleagues (2006) posited that the tendency to adopt upward comparisons should be even greater when in proximity to the top, since higher standings are better and convey importance, respect and dominance (Ivanic et al., 2011). Bridging research on competition and social comparisons, Garcia, and colleagues (2006) conducted a series of studies to explore whether rankings increase competition, and, more specifically, tested the hypothesis that proximity to the top or the bottom of a given ranking amplifies such behaviors. Of particular importance for the remainder of this work is the idea that any ranking that signifies a standard can increase competition. In other words, competition should increase when participants are close to the top and the bottom of the ranking, given that no one wants to perform worse than everybody else.

2.2 Proximity to a meaningful standard

Garcia and colleagues (2006) asked participants to imagine they were CEOs of nonprofit organizations ranked 1st in donation earnings in the “Top 500 Nonprofit”, and asked them whether they would be willing to engage in a joint venture with another nonprofit organization. In a between subject design the experimenters manipulated the ranking of the two organizations. In one condition participants were told that the other organization ranked 2nd, whereas in the other condition was ranked 102nd among 500.

Participants were asked to choose whether to join or not the venture. Choosing to join would increase their donations earnings by 7%, and the donations of the other organization by 25%. On the contrary, choosing not to join the venture would increase their donations by 5%, and the donation of the other organization by 5%. Results showed that only 56% of participants maximized their profit when the other organization was ranked 2nd, compared to 79% who did so when the organization ranked 102nd. In a second study the authors explored whether competition would arise in proximity to standards even when payoffs were removed from the scenarios. Again, participants were more likely to show competition when their organization ranked 9th and the other 10th, compared to when their organization ranked 209th and the other 210th. More interestingly, participants reported that they would feel more pain if surpassed by the other organization when they ranked 9th and 10th respectively, compared to when they both occupy an intermediate standing. In a third study participants were asked to imagine they would play a poker tournament, and for the final round they were asked to choose a player with whom they could team up. In this study Garcia and colleagues (2006) kept the distance between participants' ranking and those of others players constant, yet varying the distance from the top of the ranking. In one condition the participant ranked 3rd and the opponent 4th, in the second condition they ranked 6th and 7th respectively, in the third 12th and 13th and in the fourth 24th and 25th. Participants could choose between two strategies, either to team up or to play solo. Team up would increase their earnings by 5% and their rival's by 5%, whereas playing solo would lead to 10% increase for the participants and a 25% increase for the other player. Similarly to previous results, the authors found that the percentage of participants willing to maximize joint gains was significantly lower when both players occupied a higher standing in the ranking.

The main assumption of the authors is that comparison to any standard should increase competition, especially when these standards are meaningful. Benchmarks in the proximity of the top of the ranking can increase motivation, and the desire to be among the best performers in a relevant group. At the same time, standards that coincide with the bottom are also informative, as they communicate that a person is performing poorly, and her skills, income or abilities are among the worst in a group. As a consequence, also individuals ranking in the proximity of the bottom should be more likely to adopt any strategy to improve their status. By adopting a similar procedure as in the previous experiments, Garcia and colleagues (2006) found support for this hypothesis, showing that participants were less likely to maximize their overall performance when ranked 499th and the other classmate ranked 500th in a group of 500 students.

Poortvliet, Janssen, Van Yipereen and Van de Vliert (2009) extended the role of rankings in modulating competitive and cooperative behavior. Building on previous studies showing that proximity to a relevant standard increase competition (Garcia & Tor, 2007), these authors suggested that differences in individuals' goal orientation also affect rivalry. Performance goals entail comparisons with others, and focus on the final outcome of a given behavior. On the contrary, mastery goals entail comparison with one's previous performance on a given task, and are related to greater tendency to acquire new skills and ability (Elliot, 2005). Given the differences in the comparison target, different goals have the potential to highlight the mechanisms underlying competitive behaviors in exchange information settings. Poortvliet and colleagues (2009) hypothesized that performance goals individuals should be more likely to see relevant others as potential adversaries, especially when close to the top of the ranking. This should lead to less cooperative behavior, compared to situations in which both

players occupy intermediate positions in the ranking. On the contrary, mastery goals individual should be more oriented to self-improvement and less likely to see the other player as a threat to their standing.

Adopting the winter survival game paradigm (Johnson & Johnson, 2000), Poortvliet and colleagues (2009) manipulated participants' ranking in a between subject design (goal orientation: performance vs. mastery). After a first round of the game, participants were informed that they occupied the 96th, 51st, or 4th (low, intermediate and high rank, respectively) position within a group of 100. Then they were told that they could exchange information with another participant who carried out the same task, and ranked respectively 97th, 52nd, and 5th within the same group. At this point the authors informed that all participants would have another round to play in the survival game. In the performance goal condition participants were asked to perform better than the other player, whereas in the mastery goal condition they were told to outperform their personal performance in the first round. Results showed weak cooperation intentions among high and low ranked performance goal individuals. Yet, cooperation intentions of mastery goal participants were higher as their ranked decreased, showing that only low ranked mastery and performance individuals differed in their tendency to cooperate.

The studies reviewed above have shown that proximity to meaningful standards increase competition, whereas occupying intermediate ranking maximizes joint gains and leads to more cooperative behaviors. However, Garcia and Tor (2007) suggested that introducing a conceptual distinction between task and scale performance is important to deepen the effect of different ranking on competitive and cooperative behaviors. The authors define *task* comparisons those that concern the relative outcome in a specific task, whereas *scale* comparisons entail standing on a more general level (Garcia & Tor, 2007). Although connected, these two dimensions of comparisons are

not directly correlated. For instance, individuals and firms may obtain lower individual profit to the extent to which they can maintain their standing in a specific ranking. Thus, the threat to be surpassed in the scale (rank) may hamper more individual profit maximizations.

The distinction between scale and task performance is important as it can shed light on the mechanisms underlying competitive behaviors, especially in proximity to relevant standards. To disentangle the effect of scale and task performances, Garcia and Tor (2007) hypothesized that rivals in proximity to a standard would be less willing to accept upward comparisons when this coincided with an upward comparison on a scale. Put it differently, when close to the top (the bottom) of a ranking, individuals would be less likely to maximize their profit when the threat of being surpassed on their relative standing is salient. Building on previous research by Garcia and colleagues (2006), the authors told participants they would play a poker tournament, and before the final round they had to choose whether to practice with a rival. Choosing to practice would increase participants' earnings by 10% (and the rival's earnings by 25%). In contrast, choosing not to practice would increase both the participant and the rival's earnings by 5%. In the scale comparison condition participants were informed that choosing to practice would allow the rival to surpass the participant in the ranking. Ranking was manipulated within participants. Participants had to indicate whether they would be willing to practice when they hypothetically ranked 1st [101st] and the rival ranked 2nd [102nd] in the group. In the no scale comparison condition participants had to face the same questions but no information about being surpassed was provided. Results showed that only 25% of participants chose to maximize their joint gains when facing upward comparisons on the scale when they and their rival ranked 1st and 2nd respectively. On the contrary, 79% of participants maximized their joint gains they and their rival ranked

101st and 102nd. More interestingly, when no scale threat was salient, no difference in cooperation rates emerged across conditions.

Using a similar methodology, in a second study the authors showed that participants were less willing to maximize joint gains also in proximity to the bottom of the ranking, especially when this could allow an opponent to surpass them in the global standing. Out of 42 participants, only 13% in the bottom ranking condition maximized profits, compared to 70% in intermediate ranking condition. In a third study Garcia and colleagues (2007) extended these findings to real world data, by measuring how Major League Baseball teams trade players. By collecting data from ESPN.com and MLB4U.com over 12 months, the authors revealed that high ranked baseball teams were less likely to trade players with other highly ranked teams when this could pose a threat to their standing in the league.

Yet, in modern societies hierarchies are not fixed, and people can increase their wealth, their performance, their income over time, while, at the same time, other individuals in the same group can do the same. Further, a rational economic approach (Von Neumann & Morgenstern, 1944) would also predict that people should maximize their payoff over time irrespective of that of relevant others. In a fourth study, Garcia and Tor (2007) wondered whether rivals would be willing to trade disadvantageous inequality for extra profit and an upward comparison if they simultaneously improve their ranking on a scale. Put it simply, would a firm be willing to be surpassed by a rival when at the same time it could increase its ranking? And is this mechanism affected by the proximity to a standard? Garcia and Tor (2007) tested this hypothesis by presenting participants a modified version of the poker game (see Garcia & Tor, study 4). Participants were asked to choose whether to practice with another player, and informed that practicing would increase their payoffs by 10% and their rival's by 25%. On the

contrary, choosing not to practice would increase both players' earnings by 5%. In one condition participants were told that practicing would allow their rival to surpass them in the ranking. In another condition they were informed that practicing would allow their rival to surpass them, but at the same time participants would also increase their standing from 5th to 3rd. Thus, in the latter condition individuals had to face the dilemma of being surpassed in order to, at the same time, getting closer to the top of the ranking. Results showed that 78% of participants decided to maximize their profit (and being surpassed in the ranking) when doing so allowed for an improvement in their standing, especially when in proximity of the top. On the contrary, only 35% of the sample decided to maximize their earnings when no improvement in their ranking was possible.

These results are important since they highlight the power of standards, especially close to the top of a ranking. The authors concluded that *“in proximity of standards, absolute scale standing becomes such an important means for self-evaluation that rivals may willingly accept a painful upward comparison on the scale in order to improve their absolute standing”* (Garcia & Tor, 2007. p. 25).

2.3 Does the size of the group matter?

Evidence from past studies carried out by Garcia and colleagues (2006) and Garcia and Tor (2007) suggests that the perception of one's relative standing represents an important factor capable to affect cooperation and competition, especially in proximity to relevant standards, be they either the top or the bottom of a hierarchy. The ranking methodology, as an extension of social comparison theory, allows for a better understanding of social behaviors not only in laboratory experiments, but also in many real world domains. As previously illustrated, professional baseball teams were less likely to trade players with other teams when the threat of being surpassed in the

ranking was salient (Garcia & Tor, 2007). Graduate programs aim to be in the top list of the US News and World Report, students strive to be the top ranked within a class, and employees aim to be elected as the 'best of the month'. Of course real world contexts are difficult to replicate in experimental settings, however, it seems reasonable to believe that many experiments resemble several processes observed in the studies aforementioned.

As stated in the beginning of this work, individuals in different contexts strive to be the best, oftentimes caught in a rat race with no end. The hedonic treadmill model (Brickman & Campbell, 1971) captures this social competition, describing a situation in which people set higher and higher goals, confident that happiness and well-being lie "around the corner" (Diener, Lucas, & Scollon, 2006).

Research on the frog-pond effect (Alicke, Zell & Bloom, 2010) demonstrated the satisfactions with one's own performance depend on the relative ranking of a student within a reference group. For instance, ranking 6th in a group of ten could be better than ranking 5th in a group of five, although the grade is the same in the two scenarios. Similarly, winning a local race with other 100 competitors can be more exciting than winning a race against 5 participants.

Garcia and Tor (2009) studied how the size of the group affects competition and cooperation. They propose a "N-Effect", showing that increasing the number of competitors can, under some circumstances, decrease competitive behaviors. More specifically, the authors claimed that comparing with a greater number of participants is *less informative* to the self. Garcia and Tor (2009) built their theoretical approach on previous literature on social facilitation (Zajonc, 1965) and social loafing (Latané, Williams, & Harkins, 1979). Social loafing predicts that people's effort will decrease when an individual task is transformed in a collective task, whereas social facilitation

hypothesizes that individual's motivation will decrease in the presence of others. Such reasoning is also in line with literature exploring the diffusion of responsibility effect (Darley & Latané, 1968), which shows people's failure to assist someone in need in presence of other individuals. Building on these assumptions, Garcia and Tor (2009) suggested that competition should decrease in presence of others. More specifically, an increase in the number of individuals in a given context should lessen the saliency of social comparisons, thus making more difficult to identify specific others.

The authors tested this assumption across a series of studies. The first part of their research was a correlational study that aimed to understand the relationship between students' scores in the cognitive reflection task (CRT¹, Frederick, 2005) and in the scholastic aptitude test (SAT²) and group dimension. By controlling for the size of the sample, the authors found that lower performances occurred when the samples were smaller. These results represent a first step indicating that in the presence of fewer others, students were less motivated to put effort in a specific test. In a second study the authors investigated the same effect in a more controlled setting. To assess participants' motivation, the experimenter asked the respondents to complete a quiz as fast as possible without compromising the accuracy of their answers. Furthermore, to create an incentive, the experimenter told students that those whose completion times were in the top 20% would receive \$5. The experimental conditions were manipulated as following. In one condition participants were told that they would compete against 10 students, whereas in another condition they were told they would compete against 100 other students. Results indicated that participants in the 10-person competition completed the quiz faster than those in the 100-person competition. Such findings indicate that the mere presence of others (Suls & Wheeler, 2000) is sufficient to trigger the motivation to

¹ The test, built on research on dual process theory (Kahneman & Frederick, 2002) was developed by Frederick (2005) to assess individuals' ability to suppress intuitive wrong answers in favor of more deliberate right answers.

² A standardized test for college admissions widely adopted in the United States.

perform better on a given task. In a third study the authors hypothesized that social comparison orientation would affect the relationship between the size of a reference group and participants' performance. Social comparison orientation was assessed with the 11 items of Gibbons and Buunk's scale (1999), in order to measure differences in the degree to which people tend to compare to others.

Participants were asked to read two vignettes in which they had to imagine they were running a 5-K race with other people. In one condition they were told that they were competing with 50 participants, whereas in another condition they were running with 500 participants. As a dependent variable, Garcia and Tor (2009) asked participants to rate on a scale from 1 to 7 (1 = faster than normal, 7 = fastest in my life) to what extent they would run faster than normal. Results showed that participants reported they would run faster when among other 50 people, and that individuals high in social comparison orientation were more likely to exhibit the N-effect. A possible explanation for the N-effect is that people exhibit denominator neglect (Reyna & Brainerd, 2008) and ratio bias (Denes-Raj & Epstein, 1994). These phenomena suggest that people are not capable to focus on the overall number of opportunities for a specific target event to happen (Garcia-Retamero, Galesic, & Dhimi, 2013). In the context of these studies it is possible to state that the inability to consider the total amount of participants in a given competition would affect individuals' tendency to compete. To test this possible explanation, Garcia and Tor (2009) presented 54 participants with an online survey. Participants read a scenario in which they had to imagine they were invited for a job interview with a company, and that the company was extending offers to only 20% of the qualified applicants. In a within subjects design participants' competitive feelings were assessed when a total of 10, 30, 50, and 100 other applicants were applying for the same job offer. To further measure the nature of the social

comparison, participants were also asked to what degree they compared themselves to the other candidates, expressing their preferences on a scale from 1 (not at all) to 6 (very much). Ratio bias was assessed through a scenario adapted from previous work done by Denes-Raj and Epstein (1994) in which participants read that a person was playing two lotteries. In one lottery this person had to select a single winning number from a thousand, whereas in another lottery the same person had to pick 10 winning numbers from ten thousand numbers. Participants were told that this person won the lottery, and asked whether winning was due to picking one lucky number out of a thousand or 10 from 10 thousands. Results replicated previous evidences showing that competitive feelings decreased when the number of applicants increased. More interestingly, the ratio bias did not affect participants' responses, demonstrating that the size of the comparison group is the main cause of the N-effect.

Another factor that can account for less competition in bigger groups is the perception of the task. More specifically, competition can decrease because individuals perceive the task as too easy (Larrick, Burson, & Soll, 2007), or too difficult. For example, a marathon runner can put less effort in a race when she perceives that winning is easy, or, on the contrary, a student can decrease the motivation to perform well on graduate school admission tests if she believes that the chances to be admitted in are too small and scoring in the top percentile is too difficult. In a study by Garcia and Tor (2009) participants were asked to imagine they had to compete against 10 or 10,000 others students around the country in a challenge in which the goal was to add as many new friends as possible to their Facebook account. As in the preceding experiments, the authors measured participants' motivation to compete as well as the tendency to engage in social comparisons with others. To test the main prediction that the perceived difficult of the task would also affect the disposition to compete,

participants were asked to rate how easy it would be to win the challenge. Results showed that the motivation to compete was greater when the sample size was smaller. Further, participants competing with 10 other people believed that it would be easier to win the challenge. The most interesting finding, however, revealed that the tendency to engage in social comparisons mediates the relationship between the number of other opponents and participants' motivation to compete.

2.4 More implicit measures. Facial expressions, rankings and cooperation

What outlined above demonstrates the pervasive nature of rankings and their effect on behavior. Relevant others can affect cooperation and joint maximization of outcomes, as well as increase competition to reach the top of a standing in a relevant group. Moreover, rankings have been demonstrated to gauge more individualistic responses' (Keltner, Van Kleef, Chen, & Kraus, 2008). Similarly, individuals high in the social hierarchy are more likely to exhibit self-centered behaviors (Keltner, Gruenfeld, & Anderson, 2003). This evidence seem to suggest that occupying a high standing on a relevant dimension not only increases competition, but also fosters less prosocial conducts. On many occasions, however, rankings can be signaled with more implicit symbols and nonverbal appearances. Chen, Myers, Kopelman and Garcia (2012), aimed to study whether facial expressions can convey ranking meanings, and whether observers' ability to detect them lead to more cooperative dispositions. Building on previous literature showing that facial expressions represent accurate representations of others' state of mind (Willis & Todorov, 2006), and on work showing that social status and power can shape people's facial expressions (Carney, Hall, & LeBeau, 2005), Chen and colleagues (2012) aimed to test whether participants would perceive high status ranked individuals as less cooperative than lower status individuals.

In a first study the authors tested whether the higher a school rank was, the less cooperative the dean would appear to others. The photographs of 17 male deans from the top 20 high-ranked schools according to the U.S News and World Report were used in the study. Participants rated on a scale from 1 (not at all cooperative) to 7 (very cooperative) each of the deans depicted in the set of photographs. In line with the initial assumptions, results showed that the higher the school's ranking was, the less cooperative the deans' facial expressions were perceived. In a second study, Chen and colleagues (2012) adopted a more contextual manipulation to test their hypotheses. In the first part of their experiment participants were approached and introduced to another student (a confederate). In one condition participants were told that the other student was from Yale University (high status), whereas in the other condition they were led to believe that the other student was from Washtenaw University (low status). After being introduced, participants were asked to take a picture with the other student (the confederate) for "record-keeping purposes" (Chen et al., 2012, p. 481). In the second part of the study, a different set of participants was recruited, and individuals were asked how cooperative they thought the person in the picture looked like, on a scale from 1 to 7. Results demonstrated that participants who were told in the first phase that they had been introduced to a Yale student were perceived as more cooperative. On the contrary, participants who were led to believe that they took a picture with a lower status other were perceived as less cooperative.

While previous research tested cooperation and competition as a consequence of people's contextual standing in a relevant group (Garcia et al., 2006), Chen and colleagues' work tapped into participants' perception of someone else's status. This is important because social interactions, such as competition and cooperation, are also driven by more subtle cues that communicate about the nature of the relationship

(Argyle, 1988; Goffman, 1959; Patterson, 1983; Tiedens & Fragale, 2003). Observing someone else's nonverbal behaviors, such as changes in postures, expresses dominance or submission (Argyle, 1988; Gifford, 1991), communicates the status of the other person (Tiedens & Fragale, 2003), and implicitly defines the context as competitive (Lanzetta & Englis, 1989). In the last of a series of studies, Chen and colleagues (2012) showed that differences in the perceived facial expressions of the target affect behavioral responses as well. A total of one hundred-fifty four participants were recruited to participate in a negotiation-based task. Participants were presented with a scenario in which they were asked to play the role of representative of a student organization. Each scenario contained either the picture of a dean of one the top 5 business schools, or the picture of the dean of one of the bottom 5 ranked schools (see Chen et al., 2012). In addition to measure how cooperative they perceived the dean, participants were also asked to make an initial offer to negotiate an annual budget for their organization ranging from \$3,000 to \$5,000, that they thought the dean would approve. Such dependent variable allowed for a more behavioral response of participants' reaction towards different facial expressions. While replicating previous findings, revealing that high ranked individuals are perceived as less cooperative, the authors also showed that participants were more likely to offer a lower amount of money in the negotiation context.

Taken together, these findings seem to suggest that manipulating the physical standing of participants in a given context is not always necessary to trigger less cooperative behaviors (Garcia & Tor, 2007, Poortvliet et al., 2009). Rather, more implicit measures of status, such as facial expressions have a strong impact in modulating self-centered behavioral responses.

2.5 Rankings, competition and unethical behavior

Thus far I presented evidence showing that the presence of ranking can increase competitive behavior among individuals. Knowing one's position in the society, be it the ingroup of peers at work or the classroom, affects the motivation to increase one's performance. On many occasions people are driven by an intrinsic motivation to outperform others and obtain positive self-evaluations. Research on neuroeconomics showed that being better than someone else is associated with higher levels of serotonin, a neurotransmitter capable to enhance feelings of well-being (Madsen, 1994). The importance of occupying a high standing indicates that individuals care about how they compare to similar others and that great weight is put on their relative position within a group. Previous research demonstrated that the need to outperform others in a group is also present when no monetary rewards are provided, indicating a strong desire for dominance among individuals (Zizzo & Oswald, 2001). This last finding is important as it denotes that when people know in advance that they will receive feedback about how they fare compare to others, competition is more likely to occur.

However, although rankings can increase competition and in turn cause higher overall performances among employees, they can also prompt more self-centered and unethical actions that can be adopted to reach personal ambitions. It is important to notice that the goal of this work is not the investigation of the effects of ranking on immoral actions. Yet, I believe that exploring the relationship between rankings and unethical behavior is noteworthy, especially because of its pervasiveness in the social domain. Furthermore, as I will illustrate in Chapter 6 and Chapter 7, unethical behavior represents a possible strategy to increase one's standing and increase wealth over time.

The idea that high status is positively related to self-centered behaviors is not new and scholars already demonstrated that rich individuals are more likely to engage in

unethical behaviors (Kraus, Piff, & Keltner, 2011; Piff, Kraus, Côté, Cheng, & Keltner, 2010). Greater resources, freedom and independence have been demonstrated to be important factors in determining illegal actions. The socio economic status (SES) is an important indicator of an individual's ranking in the society. High status means dominance (Ivanic et al., 2011), wealth, prestige and education (Adler, Epel, Castellazzo, & Icksovics, 2000; Kraus et al., 2011). *Having more* is also connected to other less positive social behaviors. For instance, rich people are more disengaged during social interactions, less generous and altruistic, and on a large scale, upper class individuals donate less to charitable causes. In support of this idea, Piff, Stancato, Côté, Mendoza-Denton, and Keltner (2012) demonstrated that high status individuals were more likely to cut off other vehicles at 4-way intersection. As a proxy of status the authors relied on the kind of cars that people were driving at the time of the experiment (Frank, 1999). Similarly, high status drivers were also more likely to cut off pedestrians on a crosswalk. To assess unethical decision making, in another study participants were asked whether they would be willing to engage in a series of illicit activities described in different scenarios. Social status was assessed through the McArthur's scale of subjective social economic status (Adler et al., 2000). In line with previous assumptions, the authors found a positive correlation between SES and the intention to behave unethically. Interestingly, the effect of high status on unethical behavior held even when high and low rankings were experimentally manipulated. Literature showed that it is possible to successfully induce different social status mindsets with experimental manipulations (Kraus, Côté, & Keltner, 2010; Piff et al., 2010). Piff and colleagues (2012) tested whether priming participants to believe they were high or low ranked affected unethical decisions, irrespective of the actual SES. Results revealed that participants in the upper class priming condition took more candies from a jar that

would otherwise go to children. Furthermore, upper class individuals also reported more unethical decision across several hypothetical scenarios. Although the preceding evidences suggested the direct effect of different ranking conditions on actual and hypothetical unethical behavior, it is worth noting that other individuals' disposition can moderate the relationship between SES and actual conducts.

In the field of negotiations, Lewicki, Litterer, Minton, and Saunders (1994) and Murnighan (1991) showed that greed, experienced injustice, and uncertainty triggered deception. The role of emotions receives great attention in understanding unethical behaviors. Zhong and Liljenquist (2006) explored the role of disgust in moral violations, and showed that body cleansing (i.e. choosing antiseptics products or washing one's hands) contribute to alleviate the negative feelings associated to unethical behaviors.

Envy, defined as an unpleasant and painful feeling of inferiority and resentment (Smith & Kim, 2007), has also been related to unethical behavior. Envy arises when individuals compare their outcomes to those of others (Smith, Kim, & Parrot, 1988), and it is connected to a sense of injustice in situations in which the person believes she has been treated unfairly (Smith, Parrot, Ozer, & Moniz, 1994). It is reasonable to argue that envy could also arise when a high status person is not at the top of the ranking. For instance, it is possible to argue that in the studies described by Garcia and colleagues (2006) and Garcia and Tor (2007) envy affected participants' competitive behaviors in proximity to a standard.

High and low rankings affect other social behaviors. For instance, research showed a less altruistic disposition among high ranked individuals. This is particularly relevant, because one would expect that having more resources would be related to giving a larger percentage of one's wealth to charitable causes. Yet, national surveys

suggested that high ranked citizens spend greater part of their income on material goods and less is allocated to support charity, whereas low status people display more other-oriented behaviors and at the same time are more concerned with the needs of others. To test whether differences in ranking affect prosocial behaviors, Piff, and colleagues (2010) run a series of studies to answer this question. In a first study they adopted the dictator game to measure participants' disposition to allocate resources to a counterpart. As in previous studies, SES was assessed through the McArthur's scale (Adler et al., 2000). Such measure depicts a ladder with 10 rungs, and asks participants to place a large X on the rung they feel they stand relative to others. Lower numbers on the scale are associated to lower perceived status. In line with the authors' assumption, results revealed a negative correlation between SES and the tendency to allocate resources to another participants. The same pattern was observed when the authors experimentally manipulated participants' relative ranking. A total of 88 undergraduates were presented the same McArthur's scale adopted in previous sessions. In this study they were asked to compare themselves to people at the very top (the very bottom) on the scale, having each of the ten rungs represented where people stand in the United States. To further activate ranking differences, Piff and colleagues (2012) asked participants to imagine they were going to have social interactions with people above (below) them in the social ranking, and write up to five sentences to describe how these interactions were likely to go (Anderson & Galinsky, 2006). Then, all participants filled different measures including a survey similar to the one adopted by Frank (1999) in order to assess how much of their income is spent on different expenses, including charity. Results showed that participants who were primed to believe they occupied lower ranking were more likely to allocate a greater amount of money to prosocial causes.

Another setting in which rankings are important is the organization. In this setting people aim to the top of the hierarchy, striving to increase their relative standing compared to others (De Botton, 2004, Hollander, 1958; Podolny, 2005). Because of this, it is reasonable to believe that when one's position, or status, is at stake, individuals will go greater lengths to defend it. Competition can assume different forms, and one of these is preventing another rival to surpass us. Garcia, Song and Tesser (2010) referred to the "social comparison bias" as a phenomenon by which "people tend to protect their comparison contexts by making recommendations that prevent others from surpassing them on relevant dimensions on which they have high standing, because these dimensions are especially important to their self-esteem" (Garcia et al., 2010, p. 98). In a first study (Garcia et al., 2010) participants were asked to imagine they were full professors at Harvard Law School. In two experimental conditions the authors manipulated the *quality* and the *quantity* of the publications that participants playing the role of the professor had. In one experimental condition they were told that the professor had the highest number of prestigious publications in the Harvard Review, whereas in the other condition they were told that the professor had the highest number of publications in general. They were then told that the Law School was planning on hiring two more professors. One candidate was higher in the number of total publications (quantity) and lower in the number of *quality* publications, whereas another candidate was higher in the number of *quality* publications and lower in the total number of publications. Results showed that when participants had higher number of *quality* publications, 69% recommended hiring the candidate with an overall greater number of total publications. On the contrary, when participants have the greater amount of publications in general, only 31% recommended hiring that candidate with

the overall greater number of publications. These results suggest that people tend to protect themselves, by maintaining distinctive strength on relevant dimensions.

In a second study, Garcia and colleagues (2010) extended the evidences of the social comparison bias to real decisions. Participants received fake score relative to their performance on a series of verbal and math questions. In one condition they were informed that they scored higher on the math section and lower on the verbal section, whereas in the other condition they were told they scored higher on the verbal section and lower in the math section. In the next phase of the study individuals were informed that they would participate in a coordination task with other students, and asked to make a choice between two hypothetical team workers. Participants were given the scores of the two candidates (on the verbal and on the math section). Similarly to the previous study, participants tended to select the candidate who was worse off on the dimension in which they received the higher score. Interestingly, one may argue that students preferred to cooperate with another participant who had complimentary skills, in order to maximize their joint efforts. Yet, in the ‘hiring he candidate’ scenario, the authors clearly stated that the “Law School already has a faculty full of complementary interests” (Garcia et al., 2010, p. 99). Similarly, whens students had to choose the candidate with higher or lower verbal and math skills, they were told that the coordination task involved throwing a tennis ball in different ways, so no particular skills were needed.

Differences in status also affect *how* people look at other members of the society. Fiske (2010) proposed that social comparisons produce envy towards who is better off and scorn towards who is worse off. But what is more interesting is that people place different value on someone else’s life, according to his/her ranking in the society. The classic trolley problem presents people with the dilemma, that is, whether to choose to

sacrifice the life of one person in order to save the lives of 5 more individuals.

According to a utilitarian perspective (Baron, 1996; Bennet, 1981) there should not be any difference in judging the value of human life. Similarly, pushing someone off the bridge should be deemed as equally unacceptable, irrespective of the gender, race, or status.

Yet, Cikara, Farnsworth, Harris and Fiske (2010) wondered whether people were more likely to save pitied, envied or admirable people. At the same time they investigated whether it was equally acceptable to sacrifice a homeless, or a rich individual to stop the train. Results showed that 69% of the respondent believed it was acceptable to sacrifice a low status individual, and 77% of the participants reported that it was more acceptable to save five high status people than five low status people.

2.6 Rankings: Theory or social comparison extension?

Starting from the social comparison theory (Festinger, 1954), authors like Garcia and Tor (2007), and Garcia, Tor and Gonzalez (2006), extended the theoretical assumptions of Festinger's approach to study how comparisons, under some circumstances, trigger competition and cooperation.

Zell and colleagues (2009) further explored the nature of the ranking, showing that the same outcome can be interpreted differently according to how the social context shapes people's evaluations of a performance. On the same line, Garcia and Tor (2009) suggested that competitive behavior is affected by the size of group, and when the number of participants increase the tendency to compete decrease. I also illustrated that, oftentimes, hierarchical differences are expressed through more subtle indexes, such as facial expressions (Chen et al., 2012). Taken together these findings seem to suggest that ranking, and more specifically class-as-rank is a well-defined theoretical approach.

Yet, Fiske (2013) claimed that a theory requires processes, outcomes and falsifiable assumptions, and she proposed that, although useful in understanding several social phenomena, rankings *per se* ' don't provide evidences on their specific influences and effects on people's conduct. Rather, Fiske (2010) suggested that ranks are useful to contrast power and status. While ranks are intrinsically comparative in nature, by contrasting people with someone who is better off or worse off, status and power do not depend on relative comparisons. Fiske further suggested that status and power are not linearly correlated: for example, Quatari citizens perceive their social class as higher than the majority of their country's residence, yet, some of them may have more or less power according to the amount of business and investment business income they receive (Fiske, 2013).

The last sentences open the doors for a series of questions in the social domain. More specifically, what is the effect of ranking in the economic domain? Do people who have larger wealth exhibit higher levels of satisfaction? What is the relationship between higher income (and higher status) and subjective well-being?

Chapter 3

Status, Ranking and Subjective Well-Being

3.1 Income and relative comparisons

At the beginning of this work I pointed out that one of the most intriguing issues in the social domain is the relationship between money and subjective well-being. More specifically, although it is true that material possessions are important, many theorists are still arguing on whether high status is always positively correlated to happiness. According to conventional economics, this assumption should hold true, given that money can be exchanged for goods, that in turn, increase subjective utility (Boyce, Brown, & Moore, 2010). Such claim is supported by the *absolute-income-hypothesis* that advocates that richer people should be happier than those worse off within the same group (Diener, 1984).

Yet, research demonstrated that this is not always the case. The assumption that money does not buy happiness is rooted in the philosophical literature: Aristotle (384-322 B.C) in the Nicomean Ethics stated that “*the life of money-making is one undertaken under compulsion since wealth is not the good we are seeking and is merely useful for the sake of something else*” [italics added]. Such quote captures the idea that there are other factors that, coupled with money, affect well-being. More recently, the Easterlin’s paradox showed that national happiness in the United States has not increased since 1972, even though gross income had increase by over 40% (Easterlin, 1974, 1995; Inglehart, Foa, Peterson, & Welzel, 2008). These findings suggested that exists a weak positive correlation between higher income and happiness, and prompted scholars to elaborate different explanation to solve this paradox. Bok (2010), suggested that rich people are happier not because of their higher income, rather because happy

people are more successful and this, in turn, lead to higher earnings. It is also possible that, although the overall income increased, other social factors negatively affected people's satisfaction, such as higher crime rates, and divorces. However, scholars showed no support for this hypothesis, suggesting that the net effect of economic growth should overshadow these contextual factors (Di Tella & MacCulloch, 2007).

Stevenson and Wolfers (2008) suggested that another possible explanation for the weak positive correlation between higher income and well-being lies on the fact that only the wealthiest 20% of the American citizens actually benefited from the economic growth started in the 1975. Yet, Bok (2010) showed that this was not a plausible solution to the paradox, given that overall reported happiness declined from the mid '50s through the mid '60s, when income were equally raising among all the segments of the population.

What outlined above suggests that there are other factors capable to affect well-being and satisfaction, and that the relationship between money and happiness is not straightforward. Yet, many scholars agreed that it was important to understand which reference points people adopt when evaluating their assets in their own community. Di Tella and McCulloch (2008) and Luttmer (2005) showed that life satisfaction depended on the income of other peers in the same relevant group. It is possible that happiness was not linearly increasing because other people's income was increasing as well (see Pardo, 1968). This last assumption is in line with what illustrated in the previous chapter. More specifically, research on social comparisons revealed that people compare their performance either to the average of their group, or, on the contrary, to that of others occupying a specific position. In the economic domain, individuals can choose different reference points to evaluate their assets. For example, they can adopt global comparisons and perceive themselves as richer or poorer than the average, or select

individual comparisons and rank themselves as better off or worse off than specific relevant others within their group. On this basis, economists and psychologists developed different approaches to better understand which comparisons represent significant predictors of happiness, satisfaction, and well-being.

The *reference-income hypothesis* suggests that people adopt aggregate reference points to evaluate their performances (Klein, 1997; 2003). In the economic realm, this model predicts that individuals care about how their income compares with the norm of a comparison group (Boyce et al., 2010; Frank, 1985). According to this approach, individuals' utility increases when their income is greater than the average income of a reference group. On the contrary, utility decreases when people's income falls below the average of a reference group.

Other approaches highlight the importance of more individual social comparisons. Numerous studies suggested that people tend to compare their income to that of friends or colleagues at work (Clark & Oswald, 1998; Duesenberry, 1949; Oswald, 1983), and that these specific comparisons affected behaviors by different ways, like the place where people chose to live and work (Frank, 1985), savings behaviors (Childers & Rao, 1992) or decisions to give and help others (Andreoni & Scholz, 1998). More importantly, what these models have in common is the importance placed on relative rather than absolute comparisons.

3.2 The range frequency theory

In the late '60s, Parducci (1968) explored whether people were more likely to compare their income to the average (the norm) of a relevant group or, on the contrary, were more prone to rank themselves in the distribution of all people. Further, he investigated the relationship between socioeconomic status and subjective well-being.

Parducci (1968) formulated a theoretical approach defined *range frequency theory*, which revealed that individuals adopt both strategies when called upon evaluating their income. More specifically, the evaluation of one's asset is the result of a weighted average of two principles; the *frequency* principle and *range* principle. According to Hagerty (2000) and Parducci (1968), individuals' subjective well-being (SWB) is expressed as follows:

$$(1) \quad \text{SWB}_i = wR_i + (1 - w) F_i$$

Where R_i is written as:

$$(2) \quad R_i = (I_i - \text{min}) / (\text{max} - \text{min})$$

Where R_i is the range for the person i , I_i is the person's income, min is the smallest income in the reference group and max the largest. R_i is a range because it considers the largest and the smallest income in a population at a given time.

On the other hand, the frequency principle is written as follows:

$$(3) \quad F_i = \text{Rank}_i / N$$

and considers the *position* of a person in the entire distribution of all people. More specifically, the frequency principle is expressed as the ranking of an individual in a group of size N .

Parducci's model (1968; 1995) is important because it entails both the aggregate and the individual nature of social comparison. From this approach the author derived different assumptions that can account for subjective well-being.

First, increasing the maximum of the distribution, that is, the largest income in a given group, should decrease individual's well-being. This is because, holding the income constant, an increase of the maximum of the distribution corresponds to an increase of the range in Equation 1. A second assumption claims that more positively skewed distributions of incomes should increase a specific individual's well-being, as more people will be ranked below his personal given income i . The third prediction regards the *aggregate* (group) level of well-being, and states that, contrary to the previous assumption, more positive skewed distributions should decrease group well-being. That is, when all others' income increases, a person i could no longer be better off than anyone else and her level of happiness will then return to its starting value, as predicted by the hedonic treadmill model (Brickman & Campbell, 1971). This assumption is important because it entails the conflict between the individual and the group.

Following Hagerty (2000), it is true that more positively skewed distributions will make an individual's income look better than others', as more individuals will be ranked below her income level. Yet, at the same time, the positive skewness of income distribution will push the *aggregate* group's average to the lower tie of the distribution, thus decreasing the *overall* well-being. Put it simply, in more positively skewed distributions "the group average loses more happiness than the individual gains" (Hagerty, 2000, p. 765).

Previous research by Diener and Fujita (1997) showed that others' income in the close environment does not seem to affect personal happiness and satisfaction.

However, Hagerty (2000) suggested "that the income of others affect individual's

subjective well-being”, and that Diener and Fujita’s studies confounded the distribution of income with other factors. More specifically, Hagerty (2000) suggested that Parducci’s model could be adopted to confirm that both relative and aggregate comparisons affect individuals’ well-being. The author cited previous work by Smith, Diener, and Wedell (1989) who asked participants to rate their satisfaction with gratuities earned at work. In a study participants were shown their own gratuities and those of others. According to Parducci’s assumptions, the authors manipulated the skewness of the distribution, and showed that satisfaction ratings increased with more positively skewed distributions while *group* satisfaction decreased. These findings supported both the frequency and the range principle. Yet, no confirmation of such results was found in the field, and Hagerty (2000) suggested that this lack of consistency was due to incorrect computations of ranges and skewness in a community.

In a field study with 7000 people in the United States, and building on Parducci’s range frequency model, Hagerty (2000) showed that the increases in the maximum income in a community led to a decline in happiness; further, more positively skewed distributions, along with personal income, were positively correlated to happiness and well-being. Yet, no effect of the *minimum* income was found. Hagerty (2000) interpreted this finding as a greater tendency to adopt upward comparisons (Festinger, 1954). To empirically test this prediction, the author controlled for the effects of the mean of the 80th percentile income (upper bound) and the 20th percentile income (lower bound) within a community, and explored whether they could both account for subjective well-being. Both the lower and the upper points of the income distributions correlated with reported happiness, indicating that the individuals rated upward and downward comparisons equally. Over the last ten years other scholars deepened the effects of relative and aggregate comparisons, suggesting that the perception of one’s

economic standing does depend on the rank that an individual occupies in a relevant group.

Boyce and colleagues (2010) further developed Parducci (1968; 1995) and Hagerty's (2000) assumptions, suggesting that only the high rankings predicted happiness, whereas income and reference income had no effect. Additionally, the authors claimed that previous research adopted the range frequency approach to assess general *economic satisfaction* (Clark, Frijters, & Shields, 2008), whereas no large-scale study has examined the effect of ranking on *self-reported* general satisfaction.

Boyce and colleagues (2010) included in their analyses all the British adults from 1997 to 2004 who answered a life-satisfaction question. Participants answered on a seven point Likert scale to the question "How dissatisfied or satisfied are you with your life overall?" (Boyce et al., 2010, p. 472). Results showed that rank income explained more of the overall variation in life satisfaction, compared to absolute income. Further, when absolute and relative income were entered as predictors of satisfaction, only rank income significantly predicted life satisfaction, whereas absolute income accounted for no variance.

Lastly, the authors examined the relative weight of upward and downward comparisons, assessing whether high ranked others had greater impact on individuals' evaluations of relative standing than low ranked others. Building on the *subjective income rank model* (Brown, Gardner, Oswald, & Qian, 2008), Boyce and colleagues (2010) found that the upward comparisons significantly improved the assessment of reported satisfaction. These findings contrast with Hagerty's claim (2000) that people rate upward and downward comparisons equally, supporting Duesenberry (1949) and Festinger's (1954) assumption that people are more prone to compare with better others.

3.3 Does high status always matter?

In the aforementioned studies I illustrated how scholars aimed to understand the effects of absolute and relative income on life satisfaction and subjective well-being. Yet, results are not always consistent, with some evidence showing only weak correlations between greater wealth and happiness, and other highlighting the importance of relative rather than absolute comparisons on life satisfaction. One limit of this work is that it mainly focused on socioeconomic status as a potential predictor of well-being. Yet, socioeconomic status (SES), stresses the importance of material possessions, without considering other factors capable to affect people's satisfaction.

A limitations of the studies reviewed above is that scholars mainly focused on the solely effect of income on satisfaction and well-being. What is important, though, is to be aware that financial success is not the only factors to take into consideration when studying happiness. Bok (2010) reported that six prominent factors emerged from surveys asking people what aspects of their lives were associated to well-being. Marriage (Diener & McGovern, 2008), social relationships (Diener & Biswas-Diener, 2008), organizations and social groups (Helliwell & Putnam, 2007), employment (see Tait, Padgett, & Baldwin, 1989), health (Kates, Greiff, & Hagen, 1990), religion (see Ferris, 2002), represent the main factors associated to changes in life satisfactions. Others aspects, such as volunteering (Frey & Stutzer, 2005), and the perceived quality of one's government (Inglehart et al., 2008)), have also been demonstrated to positively affect happiness. More recently, Anderson and colleagues (2012) suggested that sociometric status, instead, would play a greater role in predicting happiness. Sociometric status "represents respect and admiration individuals have in their face-to-face groups, such as among their neighbors, coworkers or classmates" (Anderson et al., 2012). These authors found that such different form of status has more impact on well-

being for two reasons. First, it entails *local* comparisons, whereas socioeconomic status, oftentimes, demands more ‘distant’ comparisons (i.e. within one country), second, sociometric status is strictly connected to different psychological processes capable to affect subjective well-being to a greater extent, such as power and social acceptance (Baumeister & Leary, 1995). Moreover, sociometric status is positively correlated with autonomy, perceived control and more influence over others’ opinions (Berger, Rosenholtz, & Zelditch, 1980). Lastly, individuals with higher sociometric status have more friends and are more likely to get included in others’ social activities (Thibault & Kelley, 1959). Anderson and colleagues (2012) tested their *local-ladder effect* in 4 different studies, suggesting that sociometric status would increase power and social acceptance, which in turn would positively affect subjective well-being.

In a first study the authors adopted an aggregate measure of sociometric status by assessing how respected, admired and looked to in their groups participants were perceived. The authors also controlled for socioeconomic status, given that prior research showed a positive, though weak, correlation with well-being. Well-being was assessed through the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Results confirmed the hypothesis, showing that sociometric status predicted well-being, whereas no effect of socioeconomic status was found. It is possible that in the previous study, conducted among college students, the variance of the incomes was too little to account for the null effect of socioeconomic status. To this purpose, a second study was conducted using a national online sample in order to test the robustness of the hypothesis with different levels of income equally distributed. As in the first study, socioeconomic and sociometric status were regressed on subjective well-being. Additionally, personal sense of power and social acceptance (Leary, Tambor, Terdal, & Downs, 1995) were measured and entered as mediators of the relationship

between sociometric status and subjective well-being. Results showed that sociometric status affected subjective well-being through feelings of social acceptance and personal sense of power.

Previous research by Piff and colleagues (2010) demonstrated that participants' status could also be successfully induced through a priming technique. Participants were presented with the McArthur's scale (Adler et al., 2000), a measure that depicts a ladder with 10 rungs, each representing people's perceived ranking in the society. Anderson and colleagues (2012) adopted the same measure to manipulate participants' sociometric status in a third study. Those assigned to the high sociometric status condition were asked to compare themselves in terms of respect, admiration and influence, to people at the very bottom rung of the ladder. They were also told that those persons had no respect, admiration and influence in all of their important social groups. On the contrary, those in the low sociometric status were told to read the same scenario and to compare themselves to people who had "a great deal of respect, admiration and influence" in their social groups. High and low socioeconomic status was induced in a similar way, that is, by asking participants to compare to others with high (lower) wealth, education and job status. Results showed that only sociometric status had a significant effect on well-being, and that this effect was even stronger among high sociometric status participants. The effects of sociometric status were also longitudinally tested in a fourth study in which Andersons and colleagues (2012), using a sample of one hundred fifty-six M.B.A students, showed that as the students' sociometric status rose or fell after graduation, their reported well-being rose or fell accordingly.

The studies reviewed above demonstrated that relying exclusively on economic status is not sufficient to explain variations in participants' well-being. Rather, they

suggest that different psychological factors have more influence on life satisfaction. Respect, admiration, power, and acceptance are likely to contribute to a person's well-being, and such results are in line with the idea that material possessions *per se* have little impact, and they rather serve as means by which people can achieve a higher psychological standing in their group.

Recently, other authors explored the direct effects of power on happiness. Kifer, Heller, Perunovic, and Galinsky (2012) referred to previous work by Gruenfeld and colleagues (2008) and Anderson and colleagues (2012) stating that power entails control over other individuals or resources in social relationships; a form of control that can be perceived as contextual (i.e., being the boss in the workplace) or more dispositional. Importantly, Kifer and colleagues (2012) suggested a key distinction between *striving* for power and *having* power. The former entails the pursuit of greater resources, which similarly to the pursuit of greater wealth, does not always increase satisfaction, often leading to an increase in negative feelings (Emmons, 1991). On the contrary, having power triggers personal authenticity (Kraus, Chen, & Keltner, 2011). This is because power decreases the dependence on other people, thus guaranteeing the possibility to satisfy personal needs and goals without anyone else's support (Keltner, Gruenfeld, & Anderson, 2003). This, in turn, leads to higher subjective well-being. Putting all together, Kifer and colleagues (2012) suggested that having power would increase well-being through feelings of authenticity. In a first study the authors measured perceived power in three different domains: the workplace, romantic relationships, and friendships. Power and well-being were assessed through the Sense of Power Scale, and the Satisfaction With Life Scale (Anderson et al., 2012, Diener, et al., 1985) respectively, while authenticity was measured through the Fleeson and Wilt's (2010) three item authenticity scale. Results showed that power increased well-being, and this

held true in the three different domains (work, romantic relationships, and friendships). Furthermore, people with higher power reported more positive emotions and less negative emotions. Mediation analyses revealed that power was no longer a significant predictor of well-being when feelings of authenticity were entered in the model. To extend these findings Kifer and colleagues (2012) conducted two separate studies to test the different paths, that is, the relationship between power and authenticity, and the link between authenticity and well-being. High or low power was induced by asking participants to write about a time in which they encountered “a situation in which they controlled (did not control) the ability of another person to get something they wanted” (Kifer et al., 2012, p. 285). Subsequent analyses revealed that power was positively correlated with sense of authenticity, which in turn increased well-being. Bootstrapping analyses revealed that authenticity mediated the relationship between power and well-being. To test the direct effect of authenticity on well-being, the authors induced higher or lower authenticity by asking participants to recall a time in which they felt authentic or unauthentic. The manipulation was successful, indicating that individuals in the high authenticity condition reported feeling more authentic. Furthermore, the same participants exhibited greater well-being, thus supporting the direct and causal effect of authenticity on subjective well-being.

The results of these studies are critical as they shed light on different factors capable to affect life satisfaction other than material possessions. The distinction between *striving* for power and *having* power is important, as it suggests that only once power is acquired internalized feelings of self-fulfillment can actually lead to higher satisfaction. Striving for power is extrinsic in nature and research showed that these aspirations are negatively correlated to subjective well-being (Kasser & Ryan, 1996). Similarly, the *merely* pursuit of wealth is associated to unhappiness and disappointment

(Kasser & Kanner, 2004), and this is because attaching greater importance to economic achievement may make people forget about other important social factors such as human relationships and family life (Bok, 2010). Lastly, the continuous pursuit of happiness through income is doomed to failure, as predicted by the hedonic treadmill model (Brickman & Campbell, 1971).

Chapter 4

Overview of the experiments

The first chapter described the core tenet of the social comparison processes theory (Festinger, 1954), and illustrated that, when evaluating skills, opinions or abilities, individuals tend to compare with others that are perceived as similar on relevant dimensions. These comparisons can occur either upward or downward (Collins, 1996; Wills, 1981). Upward comparisons communicate that the person is among the best achievers (Wheeler, 1966), yet, on many occasions, they can also represent a threat to the individual, for example, making salient one's failures and limits (see also Gibbons, 1986; Major, Schiaccitano, & Crocker, 1983; Wheeler, & Miyake, 1992). Downward comparisons, on the contrary, entail evaluations with someone who is worse off. For instance, a student can compare her performance to that of others who received a worse grade. These types of comparisons bear positive consequences for the self (Buunk et al., 2001; Collins, 1996; Wills, 1981), with repercussions on self-esteem and well-being.

The role of the social context is also important in imposing and shaping different social comparisons. Buckingham and Alicke (2002) revealed that individuals can perceive themselves as better or worse than the average, thus adopting aggregate comparisons, or, in other occasions, they can compare with single others in a given group, thus selecting relative comparisons. Klein (1997; 2003) showed that aggregate comparisons are more diagnostic and informative, because they are based on the mean of a population, and Buckingham and Alicke (2002) extended these findings suggesting that only when a co-actor is not present, aggregate comparison are better indicator of one's performance.

In the second chapter I illustrated how people adopt aggregate and relative comparisons when they are provided information about their position (ranking) among other peers. Rankings are pervasive in our society, and highlight the importance of one's standing in different domains (i.e. the classroom, the workplace, one's sport team). Providing information about how one performs compared to others in one of these different contexts is important. A person can be the top ranked, the bottom ranked, or stand in the middle of the distribution, and this allows for the adoption of different benchmarks when evaluating her performance or assets. Ranking as second best entails two different reference points (March & Shapira, 1992). On the one hand, a person is better than the average, whereas on the other hand, it also means that she is worse than the top ranked. The presence of different benchmarks at the same time affects individuals' emotional responses as well. For instance, a person who is in the second position can draw positive feelings from performing above the average, but at the same time, the comparison with the top ranked individual can communicate that her skills and abilities are not as good as someone else's. Such feedback makes more salient limits and failures that, in turn, instill feelings of inferiority and envy (Fiske, 2013).

Although it seems safe to suggest that comparisons with better off individuals can be painful for people's self-concept (Gibbons, 1986; Major, Schiaccitano, & Crocker, 1983; Wheeler, & Miyake, 1992), under some circumstances, they can result in positive consequences. Research by Testa and Major (1990) revealed that lower ranked individuals tend to seek for upward comparisons and are motivated to increase their score when they believe that they have control on their actions. The second chapter also illustrated the behavioral consequences of different ranking conditions. Garcia and colleagues (2006) and Garcia and Tor (2007) revealed that rankings enhance competition and decrease cooperation among peers, and that these responses are more

likely to occur in proximity to the top of the bottom of a ranking, compared to when individuals stand in the middle of the group. Poortvliet and colleagues (2009) extended these findings and showed that people's goal orientation (mastery vs. approach) mediate the relationship between different rankings and cooperative behavior. More specifically, the authors' findings revealed that mastery goals individuals were more likely to cooperate when low ranked, whereas performance goals individuals exhibited more selfish behavior both when high and low ranked.

Finally, the third chapter illustrated the implications of social comparisons in the economic domain, in order to investigate the relationship between high rankings and well-being. Building on seminal work by Parducci (1968, 1995), Hagerty (2000) and Boyce and colleagues (2010), provided evidences that rank, rather than absolute income levels, was a stronger predictor of life satisfaction. Recent work by Anderson and colleagues (2013) further investigated the relationship between ranking and well-being, showing that that sociometric status, rather than socioeconomic status, had a positive impact on reported satisfaction.

Taken together, the findings emerged so far suggest that a) different sources of comparison affect the evaluation of personal assets, b) people strive to reach a higher standing in their relevant group, and c) rankings increase competition, especially in proximity to relevant standards. Based on these assumptions I propose that research on social comparisons and rankings can also be applied to explore economic scenarios in which participants can increase their status by exploiting ambiguous and unclear situations. These scenarios entail different behaviors and strategies that can lie on the boundaries of ethicality. Consider a person using the same bus ticket twice as the ticket collector forgot to clip it on the first ride. In this scenario, this person is facing a dilemma: she knows that she ought to pay for every ride, but, at the same time, she finds

herself with the opportunity to save on the price of a new ticket. Moreover, she can also feel less responsible for her actions displacing her responsibility to the ticket collector (see Spranca, Minsk & Baron, 1991).

Another domain where individuals face the opportunity to improve their status, sometimes without breaching any norm, is tax evasion. Entrepreneurs can look for loopholes in the system for the benefits of their own business and to reduce their total tax liability. For instance, the so-called “carousel fraud” phenomenon in Britain entails the purchase of goods value-added tax (VAT) free in other countries, and then sell the same goods to local customers, charging them VAT.

Kirchler, Maciejovsky, and Schneider (2003), illustrated that, tax avoidance, tax flight, and tax evasion, although bearing the same negative consequences on national budget, were perceived differently by individuals. While tax evasion and tax flight were perceived as negative and immoral, tax avoidance was associated with less negative attributes. The majority of the sample rated tax avoidance as ‘fair’, as to indicate that exploring possible loopholes in the system in order to reduce the tax burden is not as immoral as evading taxes.

Yet, it is important to recognize that tax evasion represents a more complex social behavior, in which the interplay of different sources, like the perception of authorities (Kirchler, Hoelzl, & Wahl, 2008) and perceived fairness (Etzioni, 1986) affect individuals’ choice to comply. Tax evasion can be linked to previous research on social comparisons and rankings, as individuals compare their wealth to that of relevant others when facing the opportunity to reduce their total liability. Further, in line with Parducci’s model (1968), people can adopt different reference points when comparing their incomes. High-income people are more likely to interact with other high-income citizens who serve as a comparison for their wealth and status. Therefore, high-income

citizens can easily find someone who is richer, whereas they are unlikely to engage in comparisons with those whose wealth is much lower. Additionally, the connection between high status and tax evasion (Ali, Cecil & Knoblett, 2001; Pommerehne, Weck-Hanneman, 1996) is reflected in field experiments showing higher level of unethical behavior among high status individuals (Piff et al., 2012). These findings suggest that high rankings increase competition and selfish behaviors not only in experimental settings but also in real life.

Based on these assumptions I built three experiments with the goal of exploring the role of different social comparisons on people's pursuit of wealth. More specifically, I created the opportunity to exploit ambiguous economic situations, and, to a lower extent, cheat to increase one's payoff. This last point is relevant, as it represents an important contribution of this work. While previous research demonstrated the effects of status and ranking on cooperation and competition, here, I extend these findings investigating how individuals' standing affect the disposition to take advantage of 'grey areas'.

Participants took part in a task in which they had the opportunity to win an amount of money based on their performance. Across five experimental blocks, a set of matrices was randomly displayed on the computer screen. Some of these matrices were associated to a higher payoff, whereas some were associated to a lower payoff, and participants were instructed to press the button associated to each of the two types of matrices. To create the opportunity of exploiting ambiguous situations, some trials presented both the higher and the lower payoff matrix at the same time. Yet, participants could select only one payoff, thus facing the dilemma of choosing consistently the higher or the lower payoff. Although the standard economic approach suggests that people should always maximize their payoffs (Von Neumann &

Morgenstern, 1944), descriptive theories of individuals' behavior revealed that people's choices are affected by several factors, such as biases, heuristics and perception of one's standing in the economic ranking, that do not always lead to the maximization of the outcomes (Kahneman & Tversky, 1979, Tversky & Kahneman, 1974). For instance, Kirchler and Maciejovsky (2001) showed that taxpayers who expected a refund were less likely to adopt strategies to reduce their taxable income, than those who expected an extra payment. Similarly, in the context of this work, I propose that the tendency to exploit ambiguous situations depends on factors other than the exclusive motivation to maximize one's outcome. Building on previous research on social comparisons, I suggest that different feedback about one's standing within a relevant group affect participants' economic behavior.

Experiment 1 tests the effect of aggregate feedback by contrasting participants ranking above and below the average. In a between subject experiment, participants were told that at the end of each of the experimental blocks, their earning would be compared to the average earning of a group of students who took part in the same experiment in previous sessions. Based on the literature suggesting that individuals aim to reduce the distance between themselves and similar others, and that upward comparisons have a positive effects on individuals self-views (Collins, 2000; Festinger, 1954; Lockwood & Kunda, 1997; Suls, 1977) I hypothesized that:

H1) Participants consistently ranking below the average (low status) should be more likely to maximize their payoffs when facing ambiguous situations, compared to those whose scores are consistently above the group average (high status).

H2) Participants consistently scoring below the average (low status) should obtain a higher cumulative payoff than those scoring above the average (high status).

Support for this prediction is also rooted in previous work by Buckingham and Alicke (2002), who suggested that when no other specific other is present, aggregate feedback represents a diagnostic and informative source of comparison (Klein, 1997; 2003). Further, low status participants will perceive themselves in the negative domain, as the outcomes fall consistently below the group standard domain (Kahneman & Tversky, 1979). This in turn should trigger more risky behavior (Cameron & Miller, 2009), and motivated participants to exploit any possible loophole in the system to increase their standing and recover from the loss.

Conversely, high status participants should be less motivated to exploit these ambiguous situations. This is because consistently achieving above the average performance should lead participants to perceive their standing in the positive frame (Kahneman & Tversky, 1979). Further, providing feedback that does not make explicit the actual score achieved by others may lead participants to think that they are among the high achievers in the high status group, regardless of their *actual* rank within that group. As a consequence, the awareness itself of being among the “winners” should lessen the will to exploit situations that might be perceived as almost unethical.

Experiment 1 tested both H1 and H2.

Experiment 2 was built on Experiment 1 and adopted the same experimental procedure, yet with an important difference. In Experiment 2 participants were told that their performance at the end of each experimental block would be compared to that of other students who participated in a previous session of the same experiment. More specifically, half of participants received a constant feedback, at the end of each block,

informing that they were ranking second in a group of five. The other half of participants, instead, was told, after each block, that they were ranking fourth in a group of five. By doing so, participants ranking 2nd were *better* than the average but *worse* than the top ranked student at the same time. Similarly, participants ranking 4th were *worse* than the average but *better* than the last ranked student at the same time. Such manipulation induced different reference points, and previous work suggested that individuals are capable to adopt different benchmarks when evaluating outcomes and possible behaviors (Heath, Larrick, & Wu, 1999; Lopes & Oden, 1999; March, 1988; March & Shapira, 1992; Ordóñez, Connolly, & Coughlan, 2000; Sullivan & Kida, 1995).

More importantly, to the purpose of this work, Experiment 2 introduced rankings, therefore individuals were able to adopt relative comparisons with similar others occupying a specific position in the group. This resembles Parducci's range-frequency theory (Parducci, 1968; 1995), given that participants could determine both their position within the group and, at the same time, compare to the average performance of the group.

Building on literature suggesting that individuals will be more likely to engage in competitive behavior in proximity to the top and the bottom of the ranking (Garcia et al., 2006; Garcia & Tor, 2007), and on work showing that falling consistently short of a goal (in this case being the top ranked) increased risky behavior (Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009), I hypothesized that:

H3) Second best and second last participants should exhibit a greater tendency over time to maximize their payoffs when facing ambiguous situations.

Further support for this prediction derives from previous research suggesting that social comparisons enhance the salience of possible alternative outcomes, thus shifting the relative salience of the status quo (Boles & Messick, 1995). In other words, even high-status participants should exploit the chances they have to get richer if they compare themselves to the participant who achieved the best performance rather than to those who are worse off. Such a viewpoint may resemble several real world phenomena. For instance, media and advertisement use this powerful leverage to promote the idea that everyone could be a winner and can make a dream come true, oftentimes at any cost.

However, an alternative explanation is that participants ranking always 2nd will perceive the foregone loss of not being the first ranked as more salient than those assigned to the second-last condition, for whom reaching the top of the rank is clearly not possible. For this reason it is also possible to hypothesize that:

H4) Second best and second last participants should differ in their tendency to maximize their payoffs. More specifically, second best participants should exhibit a higher disposition to increase their earnings over time compared to second last participants.

The emphasis put on achieving greater goals leads towards comparisons with better others and causes people to adopt any strategy to increase their assets even when this entails the exploitation of loopholes to reach the top. Yet, this race may have no end, as most people will always fall short compared to the assets accumulated by others (see Brickman & Campbell, 1971). Such behavior is also common in many organizational settings, from top business managers constantly striving to find ways to

improve dividends and financial assets, to big corporate scandals like Enron and Ford that showed how the need to outperform the company's strategic goals led to serious injuries and unethical behavior (Gino & Margolis, 2011; Ordóñez, et al., 2009).

Experiment 2 tested H3 and H4. Experiment 1 and Experiment 2 aimed to manipulate the role of feedback about participants' standing in a relevant group. Experiment 1 adopted an aggregate source of comparison (Buckingham & Alicke, 2002), whereas Experiment 2 introduced rankings and provided more precise information about participants' standing thus making individual comparisons more salient.

Experiment 3 was built on Experiment 2, yet with two important differences. It was developed to compare high status' participants in a between subject design where half of the participants received feedback informing that they were consistently performing better than the average (like in Experiment 1), whereas the other half received feedback informing that they were ranking 1st within a group of five students. Experiment 1 and Experiment 2 employed the same feedback manipulation to directly compare high and low status participants' economic behavior. The purpose of Experiment 3 was to compare only high status participants across two different conditions in which the nature of feedback was experimentally manipulated (aggregate vs. ranking). This is important because it allows for a better understanding of the exclusive effect of feedback on the tendency to improve one's payoffs among 'the best achievers' and 'best achievers'. Based on previous work by Garcia and colleagues (2006), and Garcia and Tor (2007), showing that rankings increase competition, especially in proximity to relevant standards (in this case, the top), I hypothesized that:

H5) Participants ranking 1st should be more prone to maximize their payoffs across blocks, showing a greater tendency to maximize ambiguous situations, compared to participants ranking above the average.

A limitation of Experiment 1 and Experiment 2 is that both experiments did not provide any measure of possible processes underlying the tendency to maximize one's payoff. Thus, Experiment 3 introduced a measure to better understand participants' economic behavior. More specifically, I hypothesized that the perceived precision of one's position within the group would affect the motivation to increase one's wealth. I also hypothesized that participants ranking 1st, who are provided with an explicit ranking and have the opportunity to adopt specific relative comparisons, would perceive the information about their standing as more precise than participants who were simply informed to be above the average. Therefore I hypothesized that:

H6) The perceived precision of the feedback relative to one's standing within the group should mediate the relationship between condition (above the average vs. always 1st) and the tendency to maximize monetary payoffs, with greater perceived precision associated to higher amount of money earned across the experimental blocks.

To summarize, the purpose of this work is to test the effects of different social comparisons (aggregate vs. ranking) on economic situations in which individuals have the opportunity to take advantage of unclear rules to increase their payoffs. Moreover, previous research mainly explored participants' behavioral responses to different ranking manipulations through hypothetical scenarios (Garcia et al., 2006; Garcia & Tor, 2007). In this work I introduce a behavioral paradigm that taps participants' actual

choices in a real economic situation. Whereas prior studies manipulated participants' status by providing bogus feedback about their performances, in the paradigm adopted in the following experiments, participants' scores reflected their actual behavior. Yet, it is important to notice that to lead participants believe that their status was either high or low, the score of the group (Experiment 1) and of the other participants (Experiment 2 and Experiment 3) was experimentally manipulated.

Furthermore, the three experiments described here measure participants' actual behavior over time, while previous work focused on comparisons that arise from one-shot situations (Zell & Alicke, 2009a).

Chapter 5

Experiment 1

Above vs. Below the average

5.1 Method

5.1.1 Participants. A total of 40 individuals (63% female; mean age 23 ± 3 years) participated in Experiment 1 completing a computer-based task. The experimental procedure took about 30 minutes.

5.1.2 Materials and procedure. E-prime 1.2 software was used for the computer task. Participants repeated the same procedure for a total of 5 experimental blocks (plus a shorter training block). In each block, they were presented with 21 square matrices containing eight asterisks and a ninth figure representing either a triangle or a square. Matrices were randomly displayed on the computer screen (CRT Monitor, 60Hz refresh rate). Specifically, out of the 21 matrices, 7 contained the square, 7 contained the triangle and 7 matrices, unexpected by participants, included both the square and the triangle (and only seven asterisks). Responses were recorded with the keyboard and participants were instructed to press the 'L' button every time the matrix included a square and the 'A' button every time it included a triangle. Also, they were informed that for each click on the 'L' button they would gain €0.50, whereas for each click on the 'A' button they would earn €0.05. Additionally, they were told that they would receive feedback about their partial and cumulative earnings at the end of each trial (see Figure 1). By doing so they were able to acquire information about their performance over time. Participants received no instructions about how to answer to the 7 ambiguous

matrices when both the square and the triangle were displayed. However, only one answer was possible and they had to choose whether to press the button associated to the higher payoff or the button associated to the lower payoff. Thus, these trials presented a chance to construe ambiguous and unexpected situations in a self-serving manner, whenever participants had a motivation to improve their status. In order to let participants ponder on their choices, and to limit errors due to time pressure, each matrix was displayed for 1500ms, and keyboard responses were recorded only after 100ms of stimuli onset.

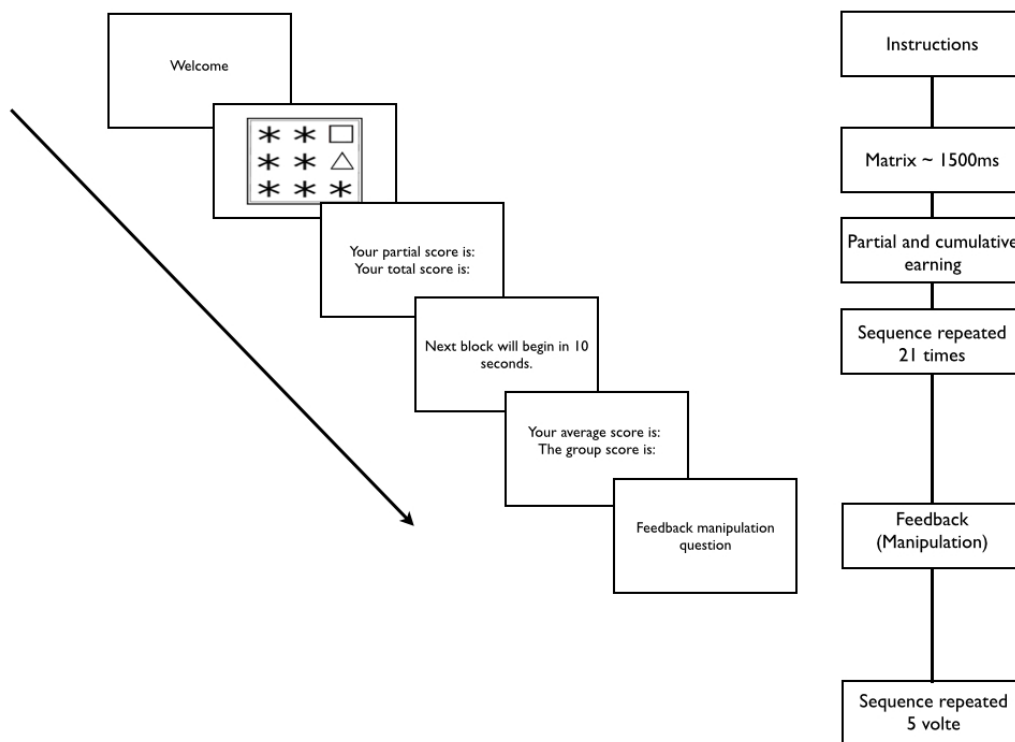


Figure 1. Scheme of the experimental procedure

Before the beginning of the computer task, participants were informed that at the end of each of the 5 experimental blocks, their cumulative score would be compared to the average earning of a group of participants who undertook the same experiment. Importantly, earnings reflected actual participants' performances and in order to induce participants to perceive themselves as either high or low status individuals, only the group score was manipulated. Therefore, regardless of their actual performance, participants assigned to the high-status condition were always told that they scored above the average, whereas participants assigned to the low-status condition were always told they scored below. By doing this, I was able to manipulate participants' status (high vs. low) in order to compare the tendency to benefit from ambiguous trials across low and high status participants.

Since our department only allowed to pay a fixed amount of money, I negotiated the possibility to use two different payoffs to incentivize participants to perceive a difference between high and low reward button. Therefore, I was obliged to give participants either a high or a low amount of money depending on their average earnings across the 5 blocks. Before the beginning of the computer task participants were told that those who achieved an average earning above the cut-off value of €7.5 would gain €10, whereas those who had an average performance falling below the cut-off of €7.5 gained €5. Therefore, the economic incentive was the same for everyone regardless the experimental condition and the feedback they received. In order to avoid any influence caused by the experimenter, participants were left alone in the laboratory for the duration of the computer task.

5.2 Results

5.2.1 Amount of money earned across blocks

Figure 2 shows the average amount of money earned across the 5 blocks. A 2 (condition: high vs. low status) X 5 (blocks) analysis of variance with the amount of money earned across 5 experimental blocks as the dependent variable revealed a significant interaction between condition and blocks, $F(1, 152) = 4.52, p < .01, \eta^2_{\text{partial}} = .11$. No significant effects of blocks and condition were found ($p = .11, p = .40$, respectively).

Separate analysis showed a significant effect of blocks in the low-status condition, $F(4, 76) = 4.62, p < .01, \eta^2_{\text{partial}} = .20$, whereas the effect was only marginally significant for high-status participants, $F(4, 76) = 2.07, p = .09$. Planned contrasts revealed a significantly higher amount of money earned in blocks 3, 4 and 5 compared to block 1 in the low-status condition ($p < .02$ for each comparison), whereas in the

high status condition the amount earned was significantly lower in block 5 compared to block 1 ($p < .04$). As shown in Table 1, contrasts effects between conditions revealed that the amount of money earned in block 1 did not differ between low and high status participants, $t(38) = -1.12, p = .27$, whereas, in block 5, low-status participants earned a significantly higher amount of money than participants in the high-status condition, $t(38) = 2.04, p < .05$.

Table 1. Amount of money earned by participants in the two experimental conditions across the five blocks of Experiment 1.

Blocks	Low Status		High Status		95% CI	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>LL</i>	<i>UL</i>
Block 1	6.55	1.09	6.90	.88	-.98	.38
Block 2	6.96	1.28	6.85	1.35	-.73	.96
Block 3	7.24	.99	6.89	1.78	-.58	1.27
Block 4	7.33	1.05	6.78	1.54	-.30	1.38
Block 5	7.23	1.12	6.34	1.59	.01	1.77

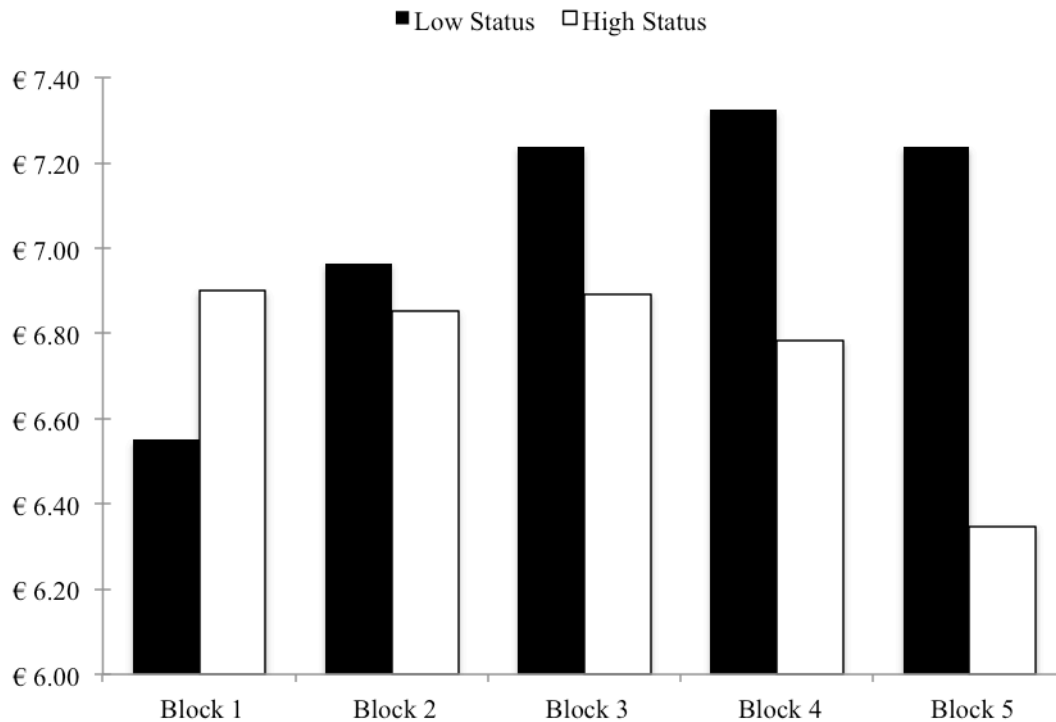


Figure 2. Amount of money (in Euro) earned across the five experimental blocks

5.2.2 Ambiguous trials

A 2 (condition: high vs. low status) X 5 (blocks) analysis of variance with the number of times participants chose the button associated to the higher payoff when presented with ambiguous trials as dependent variable revealed a significant interaction between condition and blocks, $F(4, 152) = 8.09, p < .01, \eta^2_{\text{partial}} = .17$. No significant effects of blocks and condition were found ($p = .31, p = .17$, respectively). Separate analyses showed a significant effect of blocks in the low status condition, $F(4, 76) = 4.52, p < .05, \eta^2_{\text{partial}} = .19$, and in the high status condition, $F(4, 76) = 4.81, p < .05, \eta^2_{\text{partial}} = .21$.

Planned contrasts revealed a significant increase in tendency to choose the button associated to the higher payoff in blocks 3, 4 and 5 compared to block 1 in the low-

status condition ($p < .05$ for each comparison), whereas participants in the high status condition significantly decreased their tendency to maximize their payoff in blocks 3, 4 and 5 compared to block 1 ($p < .05$ for each comparison).

Contrasts effects between conditions showed that low status participants exhibited a marginally greater tendency to exploit ambiguous situations than high status participants in block 3, (respectively, $M = 6.25$, $SD = 1.48$; $M = 5.10$, $SD = 2.29$), $t(38) = 1.88$, $p = .06$, and a significant tendency to maximize their payoffs in block 4, (respectively, $M = 6.40$, $SD = 1.60$; $M = 4.95$, $SD = 2.62$), $t(38) = 2.11$, $p < .05$, and in block 5, (respectively, $M = 6.15$, $SD = 1.84$; $M = 4.30$, $SD = 2.70$), $t(38) = 2.53$, $p < .05$.

5.2.3 Further analyses

I carried out the same ANOVA with the number of times participants chose the button associated to the higher payoff when presented with matrices containing the square as dependent variable. No main effect of blocks and condition was found (respectively, $p = .91$ and $p = .15$) and the interaction between blocks and condition did not reach significance ($p = .56$). Finally, I run the same analysis with the number of times participants chose the button associated to the higher payoff when presented with matrices containing the triangle. Results showed that participants' behavior did not vary over the five blocks ($p = .26$) and no difference across conditions emerged ($p = .50$). Lastly, the interaction between blocks and condition did not reach significance ($p = .18$).

5.3 Discussion

The goal of Experiment 1 was to test the effects of aggregate feedback on participants' motivation to increase their status and earnings when facing situations in which it was possible to choose either a higher or a lower payoff and no rule was provided. Results showed that participants adopted others' score as a reference point (Rick & Loewenstein, 2008), and this, in turn, affected their disposition to choose the higher payoff when presented with ambiguous matrices. More specifically, individuals led to believe that they were consistently scoring above the average, showed a lower tendency to maximize their payoffs over time. On the contrary, those below the average increased the number of times they chose the highest payoff when facing the ambiguity, thus confirming H1.

These findings are supported by previous literature on social comparison theory (Festinger, 1954), suggesting that people compare to relevant others when evaluating their abilities, and, in this case, their assets. The fact that participants were comparing themselves over time to the average score of other students, who undertook the same experimental task in a previous session, might have increased the perceived closeness and similarity with the target. While expecting to be different causes contrast (Manis & Paskewitz, 1984), similarity enhances assimilation, that, in the context of this experiment prompted participants below the average to try and be as good as their peers. Furthermore, when people hold the belief that they could obtain the same status as the target, assimilation is usually even stronger (Buunk et al., 1990; Lockwood & Kunda, 1997; Suls et al., 2002). In Experiment 1 this was particularly relevant for two reasons. First, comparisons occurred over time (Zell & Alicke, 2009a), thus providing several opportunities to increase participants' status. Second, individuals were free to choose

the best strategy to improve their earnings, having complete control over the outcomes of their own behavior.

Participants performing consistently above the average, on the contrary, exploited ambiguous trials to a lower extent. Although no direct measures of fulfillment and satisfaction were assessed, building on previous literature suggesting that downward comparisons increase well-being and carry positive effects to individuals (see Collins, 1996; Wills, 1981), it is possible to conclude that participants above the average drew more satisfaction from their positive standing over time, placing less weight on the mere maximization of monetary incentives. These results are also in line with previous work by Wills (1981), suggesting that the ambiguity of more general feedbacks lead people to obtain a more favorable perception of their status, with greater well-being and self-enhancement.

In the context of Experiment 1, comparing with the mean performance of a large group of student led participants above the average to perceive themselves among the best achievers, and in turn lessen the pursuit of greater wealth.

Taken together, the results that emerged in Experiment 1 revealed that people do not always maximize their monetary payoffs, even when doing so does not entail breaking any rule. This is in contrast with normative approaches (Von Neumann & Morgenstern, 1944) suggesting how individuals should always maximize the outcome of their choices. On the contrary, our manipulation showed that simply informing participants that they were performing better than the average was sufficient to reduce the likelihood to take advantage of unclear economic scenarios. Experiment 1 represents a first step towards the understanding of those mechanisms capable to modulate people's economic behavior over time when in presence of other individuals who serve as reference points. Experiment 2 will test whether being above the average (a high

status individual) is sufficient to limit the tendency to exploit grey areas. Further, it will introduce different ranking manipulations, to provide participants with more detailed information about their performance over time.

Chapter 6

Experiment 2

Second-Best vs. Second-Last

6.1 Method

6.1.1 Participants. 40 students participated in the experimental task (53% female; mean age 24 ± 3 years). As in Experiment 1 the experimental session lasted about 30 minutes.

6.1.2 Materials and procedure. Procedure and stimuli were identical to Experiment 1. However in Experiment 2 participants were told that at the end of each block their cumulative scores would be compared to those of other four students who underwent the same experiment in a previous session. The purpose of this manipulation was to control the exact position of each participant in a group and provide them their ranking among similar others. Participants were randomly assigned to two experimental conditions. In the second-best conditions participants ranked consistently second in a group of five, whereas in the second-last condition participants were informed that they were consistently ranking 4th in a group of five students. In order to compare participants' behavior, score distribution was controlled in both conditions across the five experimental blocks. More specifically, I kept the distance between the second best participant's score and the third ranked participant's score equal to the distance between the second-last participant's score and the third last participant's score. Similarly, the distance between the first ranked and the second-best participant's score was kept equal

to the distance between the second-last participant and the last ranked participant in the group.

Such manipulation allowed to explore the influence of two different social reference points simultaneously. That is, second-best participants were consistently better than the average, but at the same time, worse than the top ranked individual. Similarly, second-last participants were consistently better than the last ranked participant, but at the same time, worse than the average. The reward system was identical to Experiment 1. Participants were informed that those who achieved an average earning above the cut-off value of €7.5 would gain €10, whereas those who had an average performance falling below the cut-off of €7.5 gained €5. As in Experiment 1 the incentive was the same for all individuals, irrespective of the conditions they were assigned to. Lastly, as in Experiment 1, the experimenter left participants alone in the laboratory for the duration of the computer task.

6.2 Results

6.2.1 Amount of money earned across blocks

A 2 (second-best vs. second-last) X 5 (blocks) analysis of variance with the amount of money earned across the five blocks as the dependent variable showed a significant effect of blocks, $F(4, 152) = 4.55, p < .05, \eta^2_{\text{partial}} = .11$. The interaction between condition and blocks did not reach significance ($p = .32$), nor did the main effect of condition ($F < 1, p = .74$).

Planned contrasts revealed a significantly higher amount of money earned in blocks 4 and 5, compared to block 1 ($p < .05$ for each comparison). Table 2 shows the average amount of money earned by second-best and second-last participants across the 5 experimental blocks.

Table 2. Amount of money earned by participants in the two experimental conditions across the five blocks of Experiment 2.

Blocks	Second Best		Second Last	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Block 1	7.21	1.07	6.98	.95
Block 2	7.10	1.21	7.28	1.16
Block 3	7.23	1.45	7.50	1.47
Block 4	7.25	1.46	7.66	1.47
Block 5	7.71	1.75	7.70	1.29

6.2.2 Ambiguous trials

In order to explore the tendency to take advantage of ambiguous situations across the two experimental conditions, I performed a 2 (condition: second-best vs. second-last) X 5 (blocks) analysis of variance with the number of times participants chose the button associated to the higher payoff when presented with ambiguous trials as dependent variable. No main effect of blocks was found ($F < 1, p = .45$), and the interaction between condition and blocks did not reach significance ($F < 1, p = .86$). No difference across condition was found ($p = .52$), showing that second last and second best participants did not differ in the tendency to maximize their tally when presented with the 7 ambiguous matrices. Table 3 reports the average number of times that second-best and second-last participants chose the higher payoff when presented with ambiguous matrices.

Table 3. Number of times participants chose the higher payoff button when presented with ambiguous trials in the two experimental conditions across the five blocks of Experiment 2.

Blocks	Second Best		Second Last	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Block 1	5.90	1.86	6.00	1.89
Block 2	5.80	1.90	6.15	1.66
Block 3	5.95	2.04	6.25	1.51
Block 4	5.95	2.19	6.35	1.09
Block 5	6.00	2.05	6.50	.76

6.2.3 Further analyses

The same analysis was carried out for the number of times participants chose the button associated to the higher payoff when presented with matrices containing the square as dependent variable. No main effect of blocks and condition was found ($F < 1$, $p > .35$), and the interaction between blocks and condition did not reach significance ($p = .70$). The same ANOVA revealed a main effect of blocks when participants chose the button associated to the higher payoff when presented with matrices containing the triangle, $F(4, 152) = 3.74$, $p < .05$, $\eta^2_{\text{partial}} = .09$. No difference between conditions was found ($F < 1$, $p = .94$) and both second last and second best participants exhibited a tendency to claim a higher reward when the low payoff matrices were displayed. Planned contrasts revealed that these results depended mainly on participants' behavior toward the end of the computer task. Both groups claimed a significant higher amount of money when presented with a triangle in block 5 compared to block 1 ($p < .05$).

6.3 Discussion

The purpose of Experiment 2 was to investigate participants' tendency to exploit ambiguous situations across two different ranking conditions. In the first condition participants ranked always 2nd within a group of 5 students. In the second condition participants received feedback at the end of each block informing them that they were consistently ranking as second-last within a group of 5 students. Results showed that participants in both conditions increased their cumulative earnings over time, thus confirming H3. However, the difference between the two conditions did not change across the five blocks, which means that H4 was not supported. Such evidence is in line with previous work by Garcia and colleagues (2006) and Garcia and Tor (2007), showing that rankings increase competition. This is particularly important in the context of Experiment 2, as participants in both conditions were consistently close to relevant standards, the top and the bottom of the rankings respectively. Participants ranking 2nd strove to be the top ranked, irrespective of being consistently better than the average. Similarly, participants always second-last increased their cumulative earnings over time in order to improve their status. This behavior is also in line with previous work on goal setting and risky behavior (see Locke & Latham, 1990; Ordóñez, et al., 2009), suggesting that when people fall short of relevant goals are more likely to engage in unethical behaviors to succeed. One possible explanation to account for participants' behavior across both experimental conditions is based on the loss aversion assumption (Kahneman & Tversky, 1979). Individuals ranking 2nd consistently fell below the reference point, namely, the top of the rank, and perceived their outcomes in the negative domain. For this reason they might have gone greater lengths to be the best performers in the group. Similarly, second-last participants tried not to lose their standing and rank at the very bottom of the group. Understanding the specific

motivations that drove individuals' tendencies to improve their wealth over time goes beyond the purpose of this work, and it is yet not clear whether participants ranking second-last were motivated not to lose their standing (avoid being the last ranked) or were indeed driven by upward comparisons and aimed to the top of the ranking. Experiment 2 does not provide direct measures to answer this question. However, research based on multiple reference points, such as aspiration and survival (March & Shapira, 1988), could provide useful insights on participants' behavior.

Interestingly, Experiment 2 revealed that participants in both conditions had a tendency to claim a significantly higher reward when the lower payoff matrices were displayed in the last block compared with the first. I believe that this measure of cheating did not affect my main hypotheses. More specifically, on average, second last and second best participants maximized their outcomes in 6.25 and 5.92 matrices out of 7 ambiguous trials presented in each block. Conversely, they pressed the high payoff button in .99 and 1.04 matrices out of the 7 containing the triangle. Further analyses revealed that the tendency to choose the higher payoff button was significantly different across the three types of matrices, $F(2, 78) = 209.98, p < .001, \eta^2_{\text{partial}} = .84$. In particular, planned comparisons showed that the difference between ambiguous matrices and matrices containing a triangle was significant in every block ($p < .001$ for all comparisons). Although the little amount of cheating observed might suggest a switch toward the adoption of a different strategy to increase one's ranking, the significantly greater tendency to take advantage of ambiguous trials compared to the unethical behavior observed in Experiment 2 is in line with H3.

Experiment 2 showed that providing participants with their exact position within a group of similar others direct second-best participants' attention towards the comparison in which they are worse off rather than towards the comparison in which

they are better off (Boles & Messick, 1995). Following the core assumption of the social comparison processes theory (Festinger, 1954), results showed that upward comparisons are more salient and exert greater influence in driving participants' economic behavior (Boyce et al., 2010). Taken together, the results of Experiment 2 seem to confirm that when people are provided with their exact position in a group, they are less likely to adopt aggregate comparisons, even when such comparisons communicate that they are among the best achievers. Furthermore, it is worth noting that being consistently a high status individual is not sufficient to lessen the disposition to exploit unclear scenarios to increase one's earning over time. In fact, not only rankings prompted competition among second-best and second-last participants, but they also showed that individuals lied a bit when trying to reach the top.

Experiment 2 extended the findings emerged in Experiment 1, showing that rankings increase competition, especially in proximity to relevant standards. Furthermore it highlighted the importance of relative comparisons, revealing that when specific others are present, aggregate comparisons are not longer adopted (Buckingham & Alicke, 2002). Importantly, Experiment 2 seemed to suggest that the precision of feedback about one's position in a relevant group could enhance the saliency of relative comparison, and increase competitive behaviors. The goal of Experiment 3 is to directly compare the effect of aggregate and relative feedback among high status participants, and test whether the perceived precision of one's standing could account for individuals' economic behavior.

Chapter 7

Experiment 3

Above the Average vs. Always First

7.1 Method

7.1.1 Participants. 39 students participated in the experimental task (50% female; mean age 23 ± 3 years). As in Experiment 2 the experimental session lasted about 30 minutes.

7.1.2 Materials and procedure. Procedure and stimuli were identical to Experiment 1 and Experiment 2. Participants were randomly assigned to one of two experimental conditions. In the ‘above the average’ condition, participants received feedback at the end of each block informing them that they their scores were consistently higher than the average score of a group of students who underwent the same task in a previous session. In the ‘always first’ condition participants received feedback at the end of each block informing that they were consistently 1st in a group of five students who underwent the same task in a previous session. The purpose of this manipulation was two-fold. First, it aimed to explore the pursuit of wealth among high status individuals. Second, it allowed for a direct comparison between aggregate and relative feedback about one’s performance over time in a group of similar others. Neither Experiment 1 nor Experiment 2 provided direct measures of the possible mechanisms underlying individuals’ tendency to increase their earnings over time. Yet, Experiment 2 showed that providing more precise information about participant’s standing compared to other peers (ranking) prompted both second-best and second-last

participants to exploit loopholes in the game to increase their wealth. Further, Experiment 2 revealed that when exploiting grey areas is not enough, cheating represents a possible strategy to maximize one's outcome. To this purpose, Experiment 3 tested whether the perceived precision of the feedback about one's standing could explain why people strive for greater wealth over time. At the end of the experimental session participants were asked to indicate on a 7-point Likert scale ranging from 1 (not at all precise) to 7 (very precise), how precise they perceived the information about their position in the group at the end of each block.

Due to budget constraints, Experiment 3 adopted a slightly different reward system. More specifically, participants were informed that they would participate in a lottery where only 6 students would be selected at random to win an amount of money based on their performance on the task. Similar to Experiment 1 and Experiment 2, participants were informed that those who achieved an average earning above the cut-off value of €7.5 would gain €10, whereas those who had an average performance falling below the cut-off of €7.5 gained €5. As in Experiment 1 and Experiment 2, the experimenter left participants alone in the laboratory for the duration of the computer task.

7.2 Results

7.2.1 Amount of money earned across blocks

Figure 3 shows the average amount of money earned across the 5 blocks. A 2 (condition: above the average vs. always first) X 5 (blocks) analysis of variance with the amount of money earned across 5 experimental blocks as the dependent variable revealed a significant interaction between blocks and condition, $F(4, 148) = 5.33, p < .001, \eta^2_{\text{partial}} = .13$, whereas the effect of blocks was only marginally significant ($p =$

.052), indicating a lower amount of money earned in the block 5 compared to block 1 ($p < .05$). To explore the interaction, separate analyses for each condition were conducted. The main effect of blocks did not reach significance among participants scoring consistently above the average, ($p = .32$). The same analyses revealed a main effect of blocks among participants ranking always first, $F(4, 72) = 5.59, p < .001, \eta^2_{\text{partial}} = .23$, and planned comparisons showed a significant tendency to reduce the amount of money in blocks 4 and 5 compared to block 1 ($p < .05$ for each comparison). Lastly, a main effect of condition emerged, $F(1, 37) = 9.11, p < .05, \eta^2_{\text{partial}} = .20$, showing that participants ranking as always first earned a significantly higher amount of money across blocks than participants consistently ranking above the average (respectively, $M = 7.42, SD = .41, M = 6.84, SD = .70$).

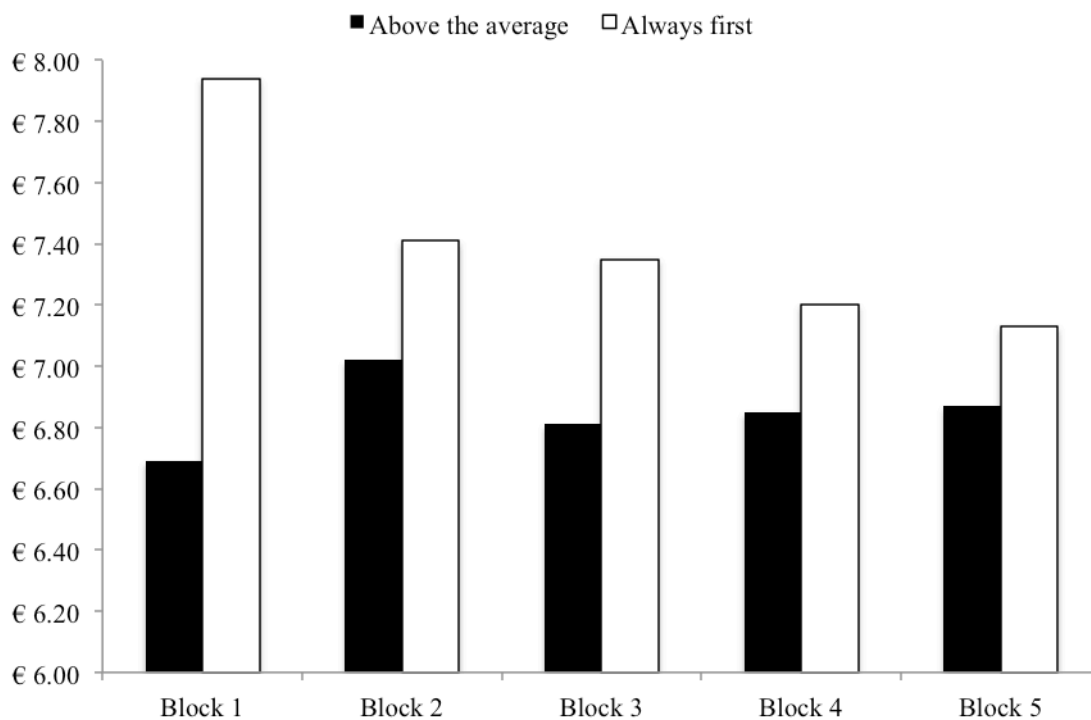


Figure 3. Amount of money (in Euro) earned across the five experimental blocks

As shown in Table 4, contrast effect between conditions revealed that participants ranking always first earned a significantly higher amount of money in blocks 1, block 2, and 3 compared to participants in the above the average condition, $t(37) = -3.65, p < .05$, $t(37) = -2.41, p < .05$, and $t(37) = -3.24, p < .05$, respectively.

Table 4. Amount of money earned by participants in the two experimental conditions across the five blocks of Experiment 3.

Blocks	Above the average		Always First		95% CI	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>LL</i>	<i>UL</i>
Block 1	6.69	.85	7.94	1.25	-1.94	-.55
Block 2	7.02	.55	7.41	.43	-.71	-.06
Block 3	6.81	.69	7.35	.29	-.89	-.20
Block 4	6.85	.97	7.20	.35	-.84	.12
Block 5	6.87	.99	7.13	.49	-.78	.25

7.2.2 Ambiguous trials

I conducted a 2 (condition: above the average vs. always first) X 5 (blocks) analysis of variance with the number of times participants chose the button associated to the higher payoff when presented with ambiguous trials as dependent variable to investigate whether the tendency to exploit ambiguous situations varied across conditions. Results showed that the main effect of the blocks and the interaction between blocks and condition did not reach significance ($F < 1, p > .58$).

However, the main effect of condition emerged, $F(1, 37) = 4.20, p < .05, \eta^2_{\text{partial}} = .10$.

Results showed that participants ranking as always first chose the button associated to the higher payoff to a greater extent than participants performing consistently above the

average (respectively, $M = 6.53$, $SD = .49$, $M = 5.76$, $SD = 1.56$). Although the interaction between blocks and condition was not significant, I ran exploratory analyses to investigate when, over time, participants in the two experimental condition differed in their tendency to exploit ambiguous situations. Contrast effects across conditions were marginally significant, revealing a higher tendency to maximize the payoff in block 1 ($p = .053$), block 3 ($p = .055$), and block 4 ($p = .06$) among always first individuals, compared to participants above the average (Table 5).

Table 5. Number of times participants chose the higher payoff button when presented with ambiguous trials in the two experimental conditions across the five blocks of Experiment 3.

Blocks	Above the average		Always first	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Block 1	5.60	1.93	6.53	.61
Block 2	6.00	1.29	6.49	.60
Block 3	5.90	1.55	6.65	.58
Block 4	5.60	2.03	6.53	.61
Block 5	5.70	2.08	6.47	.69

7.2.3 Unethical behavior

I ran the same analysis with the number of times participants chose the button associated to the higher payoff when presented with matrices containing the triangle as dependent variable. Results showed the main effect of blocks, $F(4, 148) = 3.41$, $p < .05$, $\eta^2_{\text{partial}} = .08$, as indicating significant lower unethical behavior in block 3 compared to

block 1 ($p < .05$). The interaction between blocks and condition was significant, $F(4, 148) = 6.8, p < .001, \eta^2_{\text{partial}} = .16$. In order to explore the nature of the interaction I ran separate analyses for each condition. Results showed a significant effect of blocks among participants ranking above the average, $F(4, 76) = 5.07, p < .001, \eta^2_{\text{partial}} = .22$), showing greater unethical behavior in block 2, 4 and 5 compared to block 1: respectively, $t(19) = -2.85, p < .05$ for the comparison between block 1 and block 2, $t(19) = -2.66, p < .05$ for the comparison between block 1 and block 4, and $t(19) = -2.66, p < .05$ for the comparison between block 1 and block 5. The same analyses were carried out for participants ranking always first, revealing a main effect of blocks, $F(4, 72) = 4.87, p < .05, \eta^2_{\text{partial}} = .21$, and lower unethical behavior in blocks 3, 4 and 5 compared to block 1: respectively, $t(18) = 2.18, p < .05$ for the comparison between block 1 and block 3, $t(18) = 2.50, p < .05$ for the comparison between block 1 and block 4, and $t(18) = 2.47, p < .05$ for the comparison between block 1 and block 5.

Lastly, the main effect of condition was significant, $F(1, 37) = 8.58, p < .05, \eta^2_{\text{partial}} = .18$, indicating greater unethical behavior among participants ranking always first compared to participants consistently scoring above the average (respectively, $M = .77, SD = .83, M = .20, SD = .27$). As shown in Table 6, participants always first cheated more than participants above the average in blocks 1, $t(37) = -3.01, p < .05$, block 2 $t(37) = -3.22, p < .05$, and block 3, $t(37) = -4.13, p < .05$.

Table 6. Number of times participants chose the higher payoff when presented with the matrices containing the triangle in the two experimental conditions across the five blocks of Experiment 3.

Blocks	Above the average		Always First		95% CI	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>LL</i>	<i>UL</i>
Block 1	0	0	1.79	2.7	-2.99	-.58
Block 2	.30	.48	.74	.73	-.83	-.04
Block 3	0	0	.47	.51	-.71	-.24
Block 4	.35	.59	.42	.61	-.46	.31
Block 5	.35	.59	.47	.69	-.54	.29

7.2.4 Further analyses

I carried out the same ANOVA with the number of times participants chose the key associated to the higher payoff when presented with matrices containing the square as dependent variable. No main effect of blocks and condition was found (respectively, $p = .21$ and $p = .40$) and the interaction between blocks and condition did not reach significance ($p = .23$).

7.2.5 Mediation analysis

I hypothesized that rankings provide more detailed and precise information about a participant's standing in the group, and that this, in turn, should prompt individuals to earn a higher amount of money. In order to further investigate this relationship, I first tested whether participants always first reported a higher perceived precision compared to those above the average. Results showed that the perceived precision difference was significant, $F(1, 38) = 10.39$, $p < .05$, $\eta^2_{\text{partial}} = .21$, indicating that participants always first perceived the information about their standing as more precise than did participants

above the average (respectively, $M = 6.11$, $SD = 1.44$, $M = 4.60$, $SD = 1.46$). Following Hayes and Matthews (2009), I then ran a mediation analysis to test whether the perceived precision of the feedback about participants' standing mediated the relationship between different ranking condition and the tendency to increase the payoff over time. The effect of condition was reduced to non-significance ($coeff = .28$, $[SE = .09]$, $p < .05$, to $coeff = .19$, $[SE = .10]$, $p = .065$), when the perceived precision of the feedback was entered in the model, and higher perceived precision was associated to a greater tendency to increase the payoff in the 5 experimental blocks ($coeff = .11$, $[SE = .07]$, $p = .08$). A bootstrap analysis showed that the 95% bias-corrected confidence interval for the indirect effect excluded zero $[.01, .20]$, thus indicating full mediation.

7.3 Discussion

The purpose of Experiment 3 was to compare participants' tendency to increase their cumulative earnings over time when the opportunity to exploit ambiguous situations was present. Furthermore, Experiment 3 was designed to test whether this behavior differed across two experimental conditions in which participants either received aggregate feedback informing that they were consistently better than the average, or relative feedback, informing that they were consistently ranking 1st in a group of other 4 students. The second goal of Experiment 3 was to test possible explanations of individuals' economic behavior over time.

Results showed that participants who were able to see their exact position within a group and ranked consistently 1st earned on average a higher amount of money at the end of the 5 experimental blocks, although this tendency slightly decreased in the last two blocks. Such evidence is in line with previous work by Garcia and colleagues (2006) and Garcia and Tor (2007) showing that the mere presence of rankings increase

competition. Yet, my results are innovative as they provide evidence that competition arises not only in proximity to a relevant standard, like for participants ranking second in Experiment 2, but also when individuals consistently occupy the first position in the ranking, whereas participants above the average settled for an overall lower amount of money. This pattern is similar to the one observed in Experiment 1, when the wealth of participants above the average did not change (except for the last block in which their earnings decreased) across blocks. These results support H5 and are in line with previous work by Buckingham and Alicke (2002), showing that aggregate comparisons represent a diagnostic source of information only when specific others are not present. On the other hand, participants ranking 1st were not only better than the average, but also the top performers in the group. Experiment 3 does not provide direct measures to better understand what drove their economic behavior, and future research should explore which reference points these individuals adopted.

Results regarding the tendency to maximize the monetary outcomes when presented with ambiguous matrices revealed that this disposition did not vary over time across conditions. Yet, again, participants always first, on average, chose the highest payoff in 6.50 out of 7 ambiguous trials, compared to 5.70 times out of 7 for participants scoring above the average thus providing a partial support of H5. Furthermore, exploratory analyses revealed that the exploitation of ambiguous matrices resembles the same pattern observed in the amount of money earned, thus lending stronger support for my prediction. Yet, I acknowledge that future research should adopt a greater sample size and a higher number of ambiguous matrices, as this can increase the variance in participants' responses and strengthen the hypothesized effect.

Although the main effect of condition suggested that, on average, participants always first cheated more than those scoring above the average in the first three

experimental blocks, the pattern over time across conditions is more difficult to interpret. While participants above the average did not exhibit unethical behavior in Experiment 1, in Experiment 3 these individuals increased their unethical choices across blocks. This pattern, although significant, reversed for participants ranking always first. It is important to notice that Experiment 3 adopted a reward system based on a lottery. At the beginning of the computer task, participants were informed that only 6 students would be selected at random to win the amount of money based on their performance. This difference with Experiment 1 and Experiment 2 could have made unethical behavior more tolerable as individuals might have perceived the reward less real. In this case they could have felt less guilty of cheating. Although I understand that the new reward system may have had an impact on the results in Experiment 3, it is unlikely to have affected the main hypothesis of this study. In fact, H5 received partial support and the differences were in the right direction and the reward system was the same for participants in both conditions. Yet, future studies should control for the perceived probability of winning as covariate, so as to provide stronger support for this line of inquiry.

However, it is very important to notice that many of the effects showed above regarding the average amount of money earned, the likelihood of choosing the higher payoff when presented with ambiguous matrices, and the amount of unethical behavior, seem to be driven by what participants ranking 1st do in the first experimental block. One may argue that such evidence could seriously affect my data and hypotheses, as being responsible for the marginally significant interaction reported above. Furthermore, it is also important to notice that participants in both conditions received the first feedback at the end of the first block, so on the one hand the difference in the first block cannot be explained by the experimental manipulation, but, on the other

hand, is problematic because participants should have shown a more similar performance in that block. To the purpose of better exploring the efficacy of my manipulation, and the strength of H5, I conducted further analyses excluding the first experimental block, in order to confirm my predictions.

As for the average amount of money earned over time, I conducted a repeated measure ANOVA with the amount of money earned in blocks 2, 3, 4 and 5 as dependent variable. Although the main effect of blocks and the interaction between condition and blocks did not reach significance ($p > .15$), the main effect of condition was significant, showing a higher average amount of money earned by participants always first ($M = 7.27$, $SD = .31$) compared to participants above the average ($M = 6.8$, $SD = .71$), ($F(1, 37) = 4.81$, $p < .05$, $\eta^2_{\text{partial}} = .12$).

The same analyses were carried out for the number of times participants chose the higher payoff when presented with ambiguous matrices. Resembling the same pattern observed when all the five blocks were considered, the main effect of blocks and the interaction between blocks and condition did not reach significance ($F < 1$, $p > .47$). Yet, the main effect of the condition was marginally significant ($p = .06$), showing that individuals ranking always first exploited the ambiguous trials to a greater extent than those above the average (respectively, $M = 6.53$, $SD = .54$, $M = 5.8$, $SD = 1.56$). Finally, I performed that same ANOVA with the number of time participants claimed the higher payoff when presented with the low payoff matrices. The main effect of the blocks was significant, $F(3, 111) = 2.82$, $p < .05$, $\eta^2_{\text{partial}} = .07$, as to testify lower unethical behavior in block 3 compared to block 1 in both conditions ($p < .05$). The interaction between blocks and condition was marginally significant, $F(3, 111) = 2.27$, $p = .08$, $\eta^2_{\text{partial}} = .06$. Separate analyses revealed a significant effect of blocks among participants scoring above the average, $F(3, 57) = 3.89$, $\eta^2_{\text{partial}} = .17$, and lower

unethical behavior in block 2 compared to block 1 ($p < .05$). On the contrary, the main effect of blocks did not reach significance among participants ranking always 1st ($p = .18$). Lastly, the main effect of condition was significant, $F(1, 37) = 4.16, p < .05, \eta^2_{\text{partial}} = .07$, showing, on average, greater unethical behavior among participants ranking always first compared to those scoring simply above the average (respectively, $M = .53, SD = .41, M = .25, SD = .34$). To summarize, the previous analyses based only on the last 4 blocks support H5 in the hypothesized direction. Several factors might have affected participants' behavior in the first experimental block including the different reward system based on a lottery adopted in Experiment 3. Unfortunately, I did not introduce a manipulation check to assess whether the instructions regarding the payoff were fully understood by participants, and future research should take this last point into account.

Lastly, Experiment 3 provided a possible explanation of participants' economic behavior over time. More specifically, it suggested that more precise information about one's standing in a relevant group explains different possible strategies adopted to maximize the payoffs among participants ranking above the average and always first. Results confirmed H6, and showed that when the perceived precision of feedback was entered in the regression model, the condition was no longer a significant predictor of people's behavior. This is important for two reasons. First, it shows that participants' status is not always relevant in predicting the pursuit of wealth, and second, it reveals that people are willing to exploit the ambiguity (and to a lower extent behave unethically), because they are provided with more precise information about their status in a group of similar others. While previous research shed light on the proximity to relevant standards and different goal orientation as factors able to trigger competition (Garcia & Tor, 2007; 2009; Poortvliet et al, 2009), the present results provide a direct

measure to define the boundary condition under which the maximization of outcomes occur over time.

Chapter 8

General Discussion

Goal of the present work was to explore the effect of feedback on individuals' tendency to accumulate wealth and increase social status over time. More specifically, the main purpose was to assess whether different sources of information about how people performed compared to others affected their disposition to exploit situations in which it was possible to maximize the monetary payoff without breaching any rule. The role of similar others is important, as it provides diagnostic information about how abilities, skills, and opinions fare with those of peers, friends or colleagues at work. For instance, a soccer player can compare with a teammate to assess his skills, and a researcher looking for a position may perceive herself as competitive or not according to the number of her publications and that of other applicants. The mechanism of comparing to others in order to ascertain the validity of one's opinions or skills is the core assumption of Festinger's theory of social comparison processes (Festinger, 1954), which represents the main theoretical support of this work. According to this approach, and its more recent developments, individuals compare spontaneously and oftentimes unintentionally to others (Gilber, Gisler, & Morris, 1995) to obtain stable evaluations about themselves on important dimensions. Comparisons may occur either upward (when individuals choose better others as reference points) or downward (when individuals choose worse others as reference points). The direction of the comparison is important, as it does not only affect evaluations, but also self-esteem and self-efficacy (see Collins, 1996; Morse & Gergen, 1970; Suls et al., 2002). Thus, it derives that being among the best performers, or achievers, has positive repercussions on people's

contentment and well-being. In this work I aimed to explore another dimension of comparison, namely, the individual's economic status, and its interaction with different ways to communicate participants their standing within a group of peers. I believe that this represents an important process with real social implications. People are accustomed to look at other members of their group when trying to evaluate their assets, and, at least in Western societies, wealth represents one of the most powerful signal of social status, tracing the boundaries between upper and lower class individuals, and triggering mechanisms of self and other categorization (Kraus et al., 2011). Many scholars already explored the relationship between social comparisons and wealth, yet, their work mainly focused on how economic status affected well-being (Hagerty, 2000) and on the role played by relative and absolute income on happiness (Boyce et al., 2010). To my knowledge, no previous work has been done to understand the effect of different sources of comparison, relative and absolute, on people's desire to acquire higher status in an economic scenario in which it was possible to choose either a higher or a lower monetary payoff across ambiguous situations. The ambiguity of the scenarios built across Experiment 1, Experiment 2, and Experiment 3 is another important innovative contribution of this work. Standard economic approach (Von Neumann & Morgenstern, 1944) suggests that people should always maximize their outcomes, in order to get maximum utility and reward. This should hold particularly true in the context of this work. No specific rule on how to answer the ambiguous trials was provided, and participants were free to choose the higher reward without breaching any rule. Yet, as the three experiments revealed, individuals did not always maximize their gains, showing that other contextual factors affected their actions (Tversky & Kahneman, 1974). In this work I controlled for one of the factors that can influence individuals' behavior, namely, the nature of the social comparison. Across three

experiments I showed that providing more or less detailed information on how a participant was performing compared to similar others affected her disposition to earn a higher or lower amount of money, and under some circumstances, her motivation to lie in order to acquire a higher status (see Experiment 2 and Experiment 3).

Experiment 1 represented the first step, and explored the role of aggregate feedback on individuals informed that they were consistently better or worse than the average. By doing so I was able to compare the economic behavior of high and low status participants when they were free to interpret the ambiguity in the most favorable manner. The theoretical support for Experiment 1 was based on recent developments of Festinger's theory. Results showed that when no other specific individuals are present, aggregate sources of information are more diagnostic, and communicate that someone is either among the best (high status) or the worst (low status) individuals in the group. As suggested by previous work by Festinger (1954) and Manis and Paskewitz (1984), participants scoring below the average adopted upward comparisons and increased their motivation to reach their richest peers, thus displaying a significant tendency to choose the higher payoff when facing ambiguous trials. On the contrary, as suggested by Boyce and colleagues (2010) and Hagerty (2000), high status participants might have experienced greater satisfaction and well-being from standing among the best achievers, which in turn might have prompted to exploit ambiguous trials to a lower extent.

Experiment 2 extended the findings emerged in Experiment 1, and assessed whether having a high standing is enough to reduce people's tendency to increase their status over time. The goal of Experiment 2 was to introduce different ranking conditions (second-best and second-last) and to control for the effects of relative comparisons. This last point is relevant, as on many occasions people can compare their performance to the one achieved by others in the same reference group. For instance, a student can compare

her grade in a test to those of other students, or a car seller can see how many cars she was able to sell over a semester compared to those sold by her colleagues. In the economic and organizational domain it is not rare to observe the pervasiveness of rankings. Magazines such as *Forbes* or *Fortune* regularly list the richest men (*Forbes 400*) and firms (*Fortune 500*) in the United States. In the educational setting students can assess the quality of their school by checking its standing among the best institutions. Furthermore, ranking shift the reference points people adopt when assessing their status. That is, a person can be richer than the majority of other peers, but at the same time can perceive herself as poorer than someone who has an even higher status. Experiment 2 was built on previous work by Garcia and colleagues (2006), and Garcia and Tor (2007; 2009), demonstrating that rankings increase the motivation to outperform others and enhance competition. Experiment 2 revealed the strength of relative comparisons, and showed that being consistently above the average is not sufficient to limit the pursuit of wealth, when at the same time, an individual is falling short of the top of the ranking. Interestingly, results of Experiment 2 support the claim by Garcia and Tor (2007), showing that competition among peers increase both in proximity to the top and the bottom of ranking. Lastly, Experiment 2 revealed that participants ranking 2nd cheated in the last experimental block in order to increase their earnings. Although I did not explicitly test what drove participants' behavior, it is seems reasonable to argue that when the exploitation of ambiguous trials was not enough, individuals lied in order to reach the top.

The fact that also second-last participants cheated is intriguing. Yet, it is not clear the rationale behind such behavior. A future experiment to shed light on such finding is needed. For example, it could be interesting to ask second-last participants at the end of each block what is the goal they aim to achieve in the next block, whether it is the

motivation *not to lose* their status and avoid being the last ranked, or the motivation to *increase their status* to be among the best performers. Building on previous work by March and Shapira (1992) on the existence of *survival* and *aspiration* reference points, it is possible that second-participants would do their best in order to avoid being the last ranked in the group.

While Experiment 1 and Experiment 2 allowed for a comparison between high and low status participants over time they neither a) directly compared the effects of aggregate and relative feedback, nor b) provided a possible explanation for individuals' behavior. To this purpose, Experiment 3 was designed to compare high status individuals (above the average and always first) across two different feedback manipulations (aggregate vs. ranking). Experiment 3 theoretical background was based on ranking theory (Garcia et al., 2006). Results concerning participants ranking above the average resembled a similar pattern as Experiment 1, where participants above the average earned a lower amount of money only in the last experimental block. On the other hand, participants always first, not only exhibited a greater tendency to choose the higher payoff when two different reward options were available, but also cheated to a greater extent in order to get a higher reward at the end of the experiment.

At this point I believe it is important to recognize that the cheating behavior emerged in Experiment 2 and Experiment 3 represents an unexpected finding, and that the means across conditions are quite low. One may argue that instead of deliberately lying, participants committed an error in pressing the wrong button of the keyboard. While this explanation might be reasonable, I have reason to believe that the unethical behavior was a deliberate action instead. The stimuli presented on the screen were visible and clear (a matrix measured 100mm on each side), and ample time (1500ms) was given to participants before the software moved on to the following matrix.

Furthermore, if unethical behavior is actually due to an error, it should be equally distributed in the two conditions, yet results clearly showed that this was not the case. It is true though that the reward system in Experiment 3 might have affected participants' disposition to lie, thus being responsible for the different pattern observed among participants above the average in Experiment 1 and Experiment 3. To this purpose a future experiment should be designed to further explore unethical behavior. For instance, it could be interesting to increase the number of low payoff matrices and decrease the number of high payoff matrices. By doing so participants may be more motivated to lie when they realize that following the rules will not guarantee a high final reward. Research already demonstrated that when people don't deal with real money but with a medium of exchange (i.e. tokens), they are more likely to engage in unethical behavior (Mazar, Amir, & Ariely, 2008). This is because such mediums make the moral implications less salient. Although the parallel with Experiment 3 is not straightforward, it is possible that, the reward system based on a lottery, made participants experience less guilt, given that the chance of winning 'dirty' money was relatively small.

An important finding of Experiment 3 is represented by the significant result of the mediation analysis. While Experiment 1 and Experiment 2 lacked of measures capable to explain when or why people tried to increase their wealth over time, Experiment 3 revealed a possible process underlying the effect of social feedback on participants' disposition to exploit ambiguous situations. More specifically, results showed that the precision of the information about one's standing explains the different behavior between aggregate (above the average) and relative (always first) social comparisons. We expect to observe the same results when comparing participants above the average and always 2nd, yet, future research is needed to confirm this assumption. This evidence is important as no previous work on rankings identified the boundaries

conditions under which people are more likely to compete, and to a lower extent, to lie. Similar to what I said for Experiment 2, Experiment 3 would benefit from future research investigating which benchmark participants always ranking first adopted. For example, asking them whether their goal was to improve their score compared to others, or to improve their personal performance compared to the previous block could be useful to better understand their economic choices.

8.1 Future directions

One of the limits of this set of studies is that it would be important to better understand whether people are moved by the desire to beat others, and improve their status in the group, or by the desire to improve on the previous block result. Of course there are several ways to investigate this research question. For instance, participants ranking 4th among five could be threatened by the possibility of being the worst performers in the group. Similarly, participants always first might have been worried to lose their rank and end in second place. This is because they had clear information about their scores and those of others. Put it simply, they could clearly view the score of the participant right above and below them. This was not possible in the context of Experiment 1, where participants were simply informed that they were scoring above or below the average. The difference among Experiment 1 and Experiments 2 and 3, is that individuals could *identify* a possible threat to their standing.

Previous work by Loewenstein (1996) revealed that people draw more meaning from something that is specifically identifiable and vivid. For example, in the field of charitable giving, Small and Loewenstein (2003) showed that identifiable victims evoked greater sympathy and received more money than did a group of victims, and similar results were also obtained by Kogut and Ritov (2005). These results, based on the

scope-severity paradox (Nordgren & McDonnell, 2011), can be applied to the context of the three experiments described in this work. For instance, it could be that participants receiving feedback simply informing that they were performing better than others in their group (unidentifiable threat) would be less motivated to increase their earnings over time, showing a lower disposition towards unethical behavior as well. On the contrary, those participants receiving specific information about their standing and those of others (identifiable threat) should perceive the threat as more vivid (Jenny & Lowenstein, 1997; Nisbett & Ross, 1980) and this, in turn, should lead them to increase their monetary gains and engage in unethical actions to maintain or improve their position in the ranking.

Another line of research could be adopted in order to identify possible moderators of the relationship between different feedback and the exploitation of economic grey areas. Future work should investigate which individual traits provide a better understanding of the relationship between the saliency of social comparisons and self-interested behavior. Crowe and Higgins (1997) suggested that different self-regulation strategies affect risky behavior. More specifically, these authors differentiated between promotion and prevention focus: while the former is linked to advancement, growth and accomplishments, the latter entails security, safety and risk avoidance behavior. In the context of this work, it could be interesting to study whether promotion and prevention orientations would interact with different ranking conditions, and, in turn, would account for individuals' behavior over time.

The role of emotions should be taken into account as well. Recent work showed that greed and envy mediate the relationship between environmental features and ethical behavior (Gino & Pierce, 2009; Schweitzer & Gibson, 2008). Assessing feelings of greed and envy among participants could represent a possible alternative mediator of the

relationship between feedback and pursuit of wealth. For instance, it seems reasonable to hypothesize that lower cheating would be observed among participants ranking always in first position when lower levels of greed and envy are present. On the same line, great potential lies in exploring participants' disposition toward money and wealth. To this purpose, work by Yamauchi and Temper (1982) could be important in understanding other factors capable to trigger the desire to acquire higher status.

Therefore, besides improving the understanding of which cognitive dimensions influence people's behavior depending on different social comparisons, future research should also focus on investigating the boundary conditions of the findings described here. More specifically, I believe that strong potential lies in investigating whether ethical behavior and exploitations of ambiguous scenarios represent intuitive or deliberate actions. I believe that the subject investigated in this set of studies would strongly benefit from more direct measures capable to shed light on these mechanisms. Recent research on time pressure and unethical behavior (Shalvi, Eldar, Bereby-Meyer, 2012) revealed that cheating represents an immediate response, and honest conducts are more likely to be evoked when ample time is given. In the context of the three experiments describe here, it is possible that giving no time limits to participants could limit their pursuit of wealth and unethical behavior among participants always first. This is because having more time to deliberate might make these participants realize that, although they are falling short of the top ranked, they are still better than other four students.

Finally, the amount, though small, of unethical behavior emerged in Experiment 2 and 3 is worth further investigation, especially because of its presence among participants ranking always first. Chapter 3 illustrated the relationship between high status, power and corruption (Kipnis, 1972). A broad area of literature supports the

negative effects of power on different behaviors. For instance, Gruenfeld, Inesi, Magee, and Galinsky (2008) showed that power leads people to see others as a mean to reach personal goals, and Kunstman and Maner (2011) showed that power increases the likelihood that people adopt inappropriate sexual behaviors with colleagues and subordinates. Based on previous work suggesting the higher ranked individuals are more likely to engage in unethical behaviors (Piff et al., 2012), it could be interesting to assess the likelihood that power may serve as a factor capable to trigger the pursuit of wealth through unethical actions.

8.2 Concluding remarks

I believe that, despite the simplicity of the paradigm adopted in the three experiments described here, the goal induced by my manipulations might closely resemble several dynamics happening in everyday life. While research showed that competition causes unethical behavior (Schwieren & Weichselbaumer, 2010), this work suggests that it can also lead people to interpret ambiguous situations in a way that increases their wealth when no specific rule is provided. My results suggest that this tendency is influenced by the level of detail characterizing the information about one's ranking, and that when specific others are present, the norm of a comparison group is no longer taken into account. Rather, results showed that individuals care about how their wealth fare compared to those of specific other peers in a relevant group (Clark & Oswald, 1998). Such comparisons, in turn, drive the evaluation of personal assets and trigger different economic behavior over time.

No one likes to perform worse than someone else, especially when comparisons are made within one's own group (i.e. the group of students in our experiments, a group of co-workers or a group of neighbors in real life), and the failure to meet expectations

and aspirations causes negative feelings (Cherry, Ordóñez, Gilliland, 2003; Ordóñez, et al., 2000). Similarly, in the three experiments reported here, obtaining a payoff inferior to what referent others have achieved may spoil people's positive self-efficacy and self-esteem (Collins, 1996; Shah, 2003), and motivate them to improve their position over time. The feedback manipulation adopted across the three experiments resembles the properties of many outcomes associated to different sub-goals people achieve in their everyday life. These outcomes, like partial marks in college examinations, a manager level within an organization, or a person's end-of-year gains, determine how good people perceive themselves at the end of a time period in which they tried to reach their goals and outperform others. On these basis, a possible implication of these results applies to the organizational settings. It is not rare that managers and entrepreneurs adopt rankings to provide feedback about the performances of their employees. Competition among employees may promote innovation and lead to a better and more efficient allocation of resources on the market (Charness, Masclet, & Villeval, 2013). Yet, findings from Experiment 2 and Experiment 3 indicate that a possible drawback is the higher likelihood of unethical actions, which, on the long run can carry negative consequences to the organizations. Finally, this work also provides a contribution to social comparison literature. While previous research explored the effect of relevant others in mood regulations (Emmons & Diener, 1985; Fox & Kahneman, 1992; Tesser, 1988), self-evaluations and self-perceptions (Brown et al., 1992; Cash, Cash & Butters, 1983), and self-esteem (Brown & Gallagher, 1992), here I demonstrated that relevant others may also serve as reference points thus influencing aspirations and goals people strive to achieve.

References

- Adams, J., F. (1963). Toward an understanding of inequity. *Journal of Abnormal and Social Psychology, 84*, 18-28.
- Adler, N., E., Epel, E., S., Castellazzo, G., & Ickovics, J., R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health psychology, 19*, 586-592.
- Affleck, G., & Tennen, H. (1991). Social comparison and coping with serious medical problems. In J. Suls & T. A Wills (Eds.), *Social Comparison: Contemporary theory and research* (pp. 361-391). Hillsdale, New Jersey: Erlbaum.
- Affleck, G., Pfeiffer, C., Tennen, H., & Fifield, J. (1987). Attributional processes in rheumatoid arthritis patients. *Arthritis and Rheumatism, 30*, 927-931.
- Ali, M., A., Cecil, H., W., & Knoblett, J., A. (2001). The effects of tax rates and enforcement policies on taxpayer compliance: a study of self-employed taxpayers. *Atlantic Economic Journal, 29*, 186-202.
- Alicke, M. D., Zell, E., & Bloom, D., L. (2010). Mere categorization and the frog-pond effect. *Psychological Science, 21*, 174-177.
- Anderson, C., & Galinsky, A., D. (2006). Power, optimism, and risk-taking. *European journal of social psychology, 36*, 511-536.
- Anderson, C., Kraus, M., W., Galinsky, A., D., & Keltner, D. (2012). The local-ladder effect social status and subjective well-being. *Psychological science, 23*, 764-771.
- Andreoni, J., & Scholz, J., K. (1998). An econometric analysis of charitable giving with

- interdependent preferences. *Economic Inquiry* 36, 410-428.
- Argyle, M. (1988). *Bodily communication*. Routledge, London.
- Aristotle (2000). *Nicomachean ethics* (R. Crisp, Ed.). Cambridge, England: Cambridge University Press.
- Asch, S. (1951). Effects of group pressure upon the modification and distortion of judgments. In H Guetzkow (Eds.), *Groups, leadership, and men*. Pittsburgh: Carnegie Press.
- Aspinwall, L., G., & Taylor, S., E. (1993). Effects of social comparison direction, threat, and self-esteem on affect, self-evaluation, and expected success. *Journal of Personality and Social Psychology*, 64, 708-722.
- Atkinson, J. W., Raynor, J. O., & Birch, D. (1974). *Motivation and achievement*. Washington, DC: Winston.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Baron, J. (1996). Do no harm. In D. M. Messick & A. E. Tenbrunsel (Eds.), *Codes of conduct: Behavioral research into business ethics*, pp. 197-213. New York: Russell Sage Foundation.
- Baumeister, R., F., & Leary, M., R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Beach, S., R., & Tesser, A. (2000). Self-evaluation maintenance and evolution: Some speculative notes. In J. Suls & L. Wheeler (Eds.), *Handbook of social comparison: Theory and research*. New York: Kluwer Academic Press.
- Bennet, J. (1981). Morality and consequences. In M. S. McMurrin (Ed.), *The Tanner lectures on human values* (Vol. 2, pp. 45-116). Salt Lake City: University of

Utah Press.

Berger, J., Rosenholtz, S., J., & Zelditch, M. (1980). Status organizing processes.

Annual Review of Sociology, 6, 479–508.

Bok, D. (2010). The politics of happiness: What government can learn from the new research on well-being. New Jersey: Princeton University Press.

Boles, T., L., & Messick, D., M. (1995). A reverse outcome bias: the influence of multiple reference points on the evaluation of outcomes and decisions.

Organizational Behavior and Human Decision Processes, 61, 262-275.

Borgida, E., & Nisbett, R., E. (1977). The differential impact of abstract vs.

concrete information on decisions. *Journal of Applied Social Psychology*, 7, 258-271.

Boyce, C., J., Brown, G., D., & Moore, S., C. (2010). Money and happiness rank of income, not income, affects life satisfaction. *Psychological Science*, 21, 471-475.

Brickman, P., & Campbell, D., T. (1971) Hedonic relativism and planning the good society. In M.H. Appley (eds.), *Adaptation Level Theory: A Symposium*. New York: Academic Press.

Brown, G., D., A., Gardner, J., Oswald, A., J., & Qian, J. (2008). Does wage rank affect employees' well-being? *Industrial Relations*, 47, 355-389.

Brown, J., D. (1986). Evaluations of self and others: Self-enhancement biases in social judgments. *Social Cognition*, 4, 353-376.

Brown, J., D., & Gallagher, F., M. (1992). Coming to terms with failures: Private self-enhancement and public self-effacement. *Journal of Experimental Social Psychology*, 55, 445-453.

- Brown, J., D., Novick, N., J., Lord, K., A., & Richards, J., M. (1992). When Gulliver travels: Social context, psychological closeness, and self-appraisals. *Journal of Personality and Social Psychology*, *62*, 717-727.
- Bruchmann, K., & Evans, A., T. (2013). Abstract mindsets and social comparison when global comparisons matter. *Social Psychological and Personality Science*, *4*, 427-433.
- Buckingham, J., T., & Alicke, M., D. (2002). The influence of individual versus aggregate social comparison and the presence of others on self-evaluations. *Journal of Personality and Social Psychology*, *83*, 1117-1130.
- Button, S., B., Mathieu, J., E., & Zajac, D., M. (1996). Goal orientation in organizational research: A conceptual and empirical foundation. *Organizational behavior and human decision processes*, *67*, 26-48.
- Buunk, B., P. and Ybema, J., F. (1995). Selective evaluation and coping with stress: Making one's situation cognitively more livable. *Journal of Applied Social Psychology*, *25*, 1499-1517.
- Buunk, B., P., Collins, R., L., Taylor, S., E., Van Yperen, N., W., & Dakof, G., A. (1990). The affective consequences of social comparison: either direction has its ups and downs. *Journal of Personality and Social Psychology*, *59*, 1238-1249.
- Buunk, B., P., Oldersma, F., L., & de Dreu, C., K. (2001). Enhancing satisfaction through downward comparison: The role of relational discontent and individual differences in social comparison orientation. *Journal of Experimental Social Psychology*, *37*, 452-467.
- Cameron, J., S., & Miller, D., T. (2009). Different ethical standards in gain versus loss frames. In D. De Cremer (Ed.), *Psychological Perspectives on Ethical Behavior*

- and Decision-Making* (pp. 91-106). Charlotte, North Carolina; Information Age Publishing.
- Campbell, J., D. (1986). Similarity and uniqueness: The effects of attribute type, relevance, and individual differences in self-esteem and depression. *Journal of Personality and Social Psychology*, *50*, 281-294.
- Carlsson, R., Johansson-Stenman, O., & Martinsson, P. (2003). Do you enjoy having more than others? Survey evidence of positional goods. *Economica*, *74*, 586-598.
- Carney, D., R., Hall, J., A., & LeBeau, L., S. (2005). Beliefs about the nonverbal expression of social power. *Journal of Nonverbal Behavior*, *29*, 105-123.
- Cash, T. E, Cash, D., W., & Butters, J., W. (1983). "Mirror, mirror, on the wall...?": Contrast effects and self-evaluations of physical attractiveness. *Personality and Social Psychology Bulletin*, *9*, 351-358
- Charness, G., Masclet, D. and Villeval, M., C. (2013). The dark side of competition for status. *Management Science*, *60*, 38-55.
- Chen, P., Myers, C., G., Kopelman, S., & Garcia, S., M. (2012). The hierarchical face: Higher rankings lead to less cooperative looks. *Journal of Applied Psychology*, *97*, 479-486.
- Cherry, B., Ordóñez, L., D., & Gilliland, S., W. (2003). Grade expectations: the effects of expectations on fairness and satisfaction perceptions. *Journal of Behavioral Decision Making*, *16*, 375-395.
- Childers, T., L., Rao, A., R. (1992). The influence of familial and peer-based reference groups on consumer decisions. *Journal of Consumer Research* *19*, 198-211.
- Cikara, M., Farnsworth, R., A., Harris, L., T., & Fiske, S., T. (2010). On the wrong

- side of the trolley track: Neural correlates of relative social valuation. *Social Cognitive and Affective Neuroscience*, 5, 404-413.
- Clark, A., E., & Oswald, A., J. (1998). Comparison-concave utility and following behaviour in social and economic settings. *Journal of Public Economics*, 70, 133-155.
- Clark, A., E., Frijters, P., & Shields, M., A. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 46, 95-144.
- Collins, R., L. (1996). For better or worse: The impact of upward social comparison on self-evaluations. *Psychological Bulletin*, 119, 51-69.
- Crocker, J., & Gallo, L. (1985). *The self enhancing effect of downward comparison*. Paper presented at the 93rd Annual Convention of the American Psychological Association, Los Angeles, CA.
- Crowe, E., & Higgins, E., T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational behavior and human decision processes*, 69, 117-132.
- Darley, J. M., & Latané, B. (1968) Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology*, 8, 377-383.
- De Botton, A. (2004), Status Anxiety, London: Hamish Hamilton.
- Denes-Raj, V., & Epstein, S. (1994). Conflict between intuitive and rational processing: when people behave against their better judgment. *Journal of Personality and Social Psychology*, 66, 819-829.
- Di Tella, R., & MacCulloch, R. (2008). Gross national happiness as an answer to the Easterlin Paradox? *Journal of Development Economics*, 86, 22-42.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95, 542-575.

- Diener, E., & Biswas-Diener, R. (2008). Happiness: Unlocking the mysteries of psychological wealth. Malden, Massachusetts: Blackwell Publishing.
- Diener, E., Emmons, R., A., Larsen, R., J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*, 71-75.
- Diener, E., Fujita, S. (1997). Social comparisons and subjective well-being. In B. P. Buunk & F. X. Gibbons (Eds), *Health, coping, and well-being*, (p. 329-357). Mahwah, New Jersey: Earlbaum.
- Diener, E., Lucas, R., E., & Scollon, C., N. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *American Psychologist*, *61*, 305-314.
- Diener, E., Suh, E., M., Lucas, R., E., & Smith, H., L. (1999). Subjective well-being: Three decades of progress. *Psychological bulletin*, *125*, 276-302
- Diener, M., L., & McGovern, M., B. (2008). What makes people happy? In Michael Eid and Randy J. Larsen (eds.), *The science of subjective well-being*. New York: Guilford Press.
- Duesenberry, J., S. (1949). Income, saving and the theory of consumer behavior. Harvard University. Press, Cambridge, Massachusetts.
- Easterlin, R., A. (1974). Does economic growth improve the human lot: some empirical evidence. In: David, P.A., Reder, M.W. (Eds.), *Nations and Households in Economic Growth*. New York: Academic Press.
- Easterlin, R., A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization*, *27*, 35-47.
- Easterlin, R., A. (2004). The economics of happiness. *Daedalus*, *133*, 26-33. *Economic Literature*, *46*, 95-144.
- Elliot, A., J. (2005). A conceptual history of the achievement goal construct In A. J.

- Elliot, & C. S. Dweck (Eds.), *Handbook of competence and motivation*. (pp. 52-72). New York: The Guilford Press.
- Elliot, A. J., & Harackiewicz, J. M. (1994). Goal setting, achievement orientation, and intrinsic motivation: A mediational analysis. *Journal of personality and social psychology*, *66*, 968-980.
- Emmons, R. (1991). Personal strivings, daily life events, and psychological and physical well-being. *Journal of Personality*, *59*, 453-472.
- Emmons, R., & Diener, E. (1985). Factors predicting satisfaction judgments: A comparative examination. *Social Indicators Research*, *16*, 157-167.
- Etzioni, A. (1986). Tax evasion and perceptions of tax fairness: A research note. *The Journal of Applied Behavioral Science*, *22*, 177-185.
- Ferris, A., L. (2002). Religion and the quality of life. *Journal of Happiness Studies*, *3*, 199-215.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117-140.
- Fiske, S., T. (2010). Envy up, scorn down: how comparison divides us. *American Psychologist*, *65*, 698-706.
- Fiske, S., T. (2013). What's in a Theory of Rank? *Psychological Inquiry*, *24*, 109-111.
- Fleeson, W., & Wilt, J. (2010). The relevance of big five trait content in behavior to subjective authenticity: Do high levels of within- person behavioral variability undermine or enable authenticity achievement? *Journal of Personality*, *78*, 1353-1382.
- Fox, C. R., & Kahneman, D. (1992). Correlations, causes, and heuristics in surveys of life satisfaction. *Social Indicators Research*, *27*, 221-234.
- Frank, R., H. (1985). The demand for unobservable and other nonpositional goods.

- The American Economic Review*, 75, 101-116.
- Frank, R., H. (1999). Higher education: The ultimate winner-take-all market? CHERI Working Paper no. 2
- Frederick, S. (2005). Cognitive reflection and decision-making. *The Journal of Economic Perspectives*, 19, 25-42.
- Frey, B., & Stutzer, A. (2005). Happiness Research: States and Prospects. *Review of Social Economy*, 62, 207-213.
- Garcia-Retamero, R., Galesic, M., & Dhimi, M. K. (2013). Reducing denominator neglect. In *Transparent Communication of Health Risks* (pp. 145-164). New York: Springer.
- Garcia, S., M., & Tor, A. (2009). The N-Effect: More competitors, less competition. *Psychological Science*, 20, 871-877.
- Garcia, S., M., & Tor, A. (2007). Rankings, standards, and competition: Task vs. scale comparisons. *Organizational Behavior and Human Decision Processes*, 102, 95-108.
- Garcia, S., M., Song, H., & Tesser, A. (2010). Tainted recommendations: The social comparison bias. *Organizational Behavior and Human Decision Processes*, 113, 97-101.
- Garcia, S., M., Tor, A., & Gonzalez, R. (2006). Ranks and rivals: A theory of competition. *Personality and Social Psychology Bulletin*, 32, 970-982.
- Gerrard, M., Gibbons, F., X., & Sharp, J. (1985). Social comparison in a self help group for bulimics. Paper presented at the annual meeting of the American Psychological Association. Los Angeles, CA.
- Gibbons F., X. (1985) Stigma perception: social comparison among mentally retarded persons. *American Journal of Mental Deficiency* 90, 98-106.

- Gibbons, F., X. (1986). Stigma and interpersonal relationships. In S. C. Ainlay, G. Becker, & L. M. Coleman (Eds.), *The dilemma of difference* (pp. 123-256). New York: Plenum Press.
- Gibbons, F., X., & Buunk, B., P. (1999). Individual differences in social comparison: development of a scale of social comparison orientation. *Journal of personality and social psychology*, *76*, 129-142.
- Gibbons, F., X., & Gerrard, M. (1989). Effects of upward and downward social comparison on mood states. *Journal of Social and Clinical Psychology*, *8*, 14-31.
- Gifford, R. (1991). Mapping non-verbal behavior on the interpersonal circle. *Journal of Personality and Social Psychology*, *61*, 279-288.
- Gilbert, D., T., Giesler, R., B., & Morris, K., A. (1995). When comparisons arise. *Journal of personality and social psychology*, *69*, 227-236.
- Gino, F., & Margolis, J., D. (2011). Bringing ethics into focus: How regulatory focus and risk preferences influence (un)ethical behavior. *Organizational Behavior and Human Decision Processes*, *115*, 145-156.
- Gino, F., & Pierce, L. (2009). The abundance effect: Unethical behavior in the presence of wealth. *Organizational Behavior and Human Decision Processes*, *109*, 142-155.
- Goethals, G., R., & Darley, J., M. (1977). Social comparison theory: An attributional approach. In J. M. Suls & R. L. Mitter (Eds.) *Social comparison processes: Theoretical and empirical perspectives* (pp. 258-278). Washington, DC: Hemisphere.
- Goffman, E. (1959). *The presentation of self in everyday life* Garden City. New York: Doubleday.

- Greenberg, P., J. (1932). Competition in children: An experimental study. *American Journal of Psychology*, 44, 221-248.
- Gruenfeld, D., H., Inesi, M., E., Magee, J., C., & Galinsky, A., D. (2008). Power and the objectification of social targets. *Journal of personality and social psychology*, 95, 111-127.
- Hackmiller, K., L. (1966). Threat as a determinant of downward comparison. *Journal of Experimental Social Psychology*, 2, 32-39.
- Hagerty, M., R. (2000). Social comparisons of income in one's community: evidence from national surveys of income and happiness. *Journal of Personality and Social Psychology*, 78, 764.
- Hayes, A., F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, 41, 924–936.
- Heath, C., Larrick, R., P., & Wu, G. (1999). Goal as reference points. *Cognitive Psychology*, 38, 79-109.
- Helgeson, V., S., & Taylor, S., E. (1993). *Social comparisons and adjustment among cardiac patients. Journal of Applied Social Psychology*, 23, 1171-1195.
- Helliwell, J., F., & Putnam, R., D. (2007). The social context of well-being. *Philosophical Transactions of the Royal Society*, 359, 1435-1446.
- Helson, H. (1964). *Adaptation-level theory*. New York: Harper and Row.
- Hoffman, P., J., Festinger, L., & Lawrence, H., D., (1954). Tendencies towards comparability in competitive bargaining. *Human Relations*, 7, 141-159.
- Hogg, M., A., van Knippenberg, D., & Rast, D., E. (2012). Intergroup leadership in organizations: Leading across group and organizational boundaries. *Academy of Management Review*, 37, 232-255.
- Hollander, E., P. (1958) Conformity, status, and idiosyncrasy credit. *Psychological*

- Review*, 65, 117- 127.
- Inglehart, R, Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: A global perspective (1981-2007). *Perspectives on Psychological Science*, 3, 264-285.
- Isen, A., M. (1970). Success, failure, attention and reaction to others: The warm glow of success. *Journal of Personality and Social Psychology*, 15, 294-301.
- Ivanic, A. S., Overbeck, J. R., & Nunes, J. C. (2011). Status, Race, and Money The Impact of Racial Hierarchy on Willingness to Pay. *Psychological science*, 22, 1557-1566.
- Jenni K., E., Loewenstein G. (1997). Explaining the “Identifiable victim effect”. *Journal of Risk and Uncertainty*, 14, 235-257.
- Jensen, M., P., & Karoly, P. (1992). Pain-specific beliefs, perceived symptom severity, and adjustment to chronic pain. *The Clinical Journal of Pain*, 8, 123-130.
- Johnson, D., & Johson, F., P. (2000). *Joining together. Group theory and group skills* (7th ed). Boston: Allyn & Bacon.
- Jones, B., & Rachlin, H. (2006). Social discounting. *Psychological Science*, 17, 283-286.
- Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, 80, 237-251.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Kasser, T., & Kanner, A., D. (Eds.). (2004). *Psychology and consumer culture: The struggle for a good life in a materialistic world*. Washington, DC: APA.
- Kasser, T., & Ryan, R., M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social*

- Psychology Bulletin*, 22, 80-87.
- Kates, N., Greiff, B., S., & Hagen, D., Q. (1990). The psychosocial impact of job loss. American Psychiatric Association.
- Keltner, D., Gruenfeld, D., H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological review*, 110, 265-284.
- Keltner, D., Van Kleef, G., A., Chen, S., & Kraus, M., W. (2008). A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in experimental social psychology*, 40, 151-192.
- Kifer, Y., Heller, D., Perunovic, W., Q., E., & Galinsky, A., D. (2013). The good life of the powerful: The experience of power and authenticity enhances subjective well-being. *Psychological science*, 24, 280-288.
- Kipnis, D. (1972). Does power corrupt? *Journal of personality and social psychology*, 24, 33-41.
- Kirchler, E., & Maciejovsky, B. (2001). Tax compliance within the context of gain and loss situations, expected and current asset position, and profession. *Journal of Economic Psychology*, 22, 173-194.
- Kirchler, E., Hoelzl, E., & Wahl, I. (2008). Enforced versus voluntary tax compliance: The “slippery slope” framework. *Journal of Economic Psychology*, 29, 210-225.
- Kirchler, E., Maciejovsky, B., & Schneider, F. (2003). Everyday representations of tax avoidance, tax evasion, and tax flight: Do legal differences matter? *Journal of Economic Psychology*, 24, 535-553.
- Klein, W., M. (1997). Objective standards are not enough: Affective, self-evaluative, and behavioral responses to social-comparison information. *Journal of Personality and Social Psychology*, 72, 763-774.

- Klein, W., M. (2003). Effects of objective feedback and “single other” or “average other” social comparison feedback on performance judgments and helping behavior. *Personality and Social Psychology Bulletin*, *29*, 418-429.
- Kogut, T., & Ritov, I. (2005). The “identified victim” effect: An identified group, or just a single individual? *Journal of Behavioral Decision Making*, *18*, 157-167.
- Kraus, M., W., Chen, S., & Keltner, D. (2011). The power to be me: Power elevates self-concept consistency and authenticity. *Journal of Experimental Social Psychology*, *47*, 974-98.
- Kraus, M., W., Côté, S., & Keltner, D. (2010). Social class, contextualism, and empathic accuracy. *Psychological Science*, *21*, 1716-1723.
- Kraus, M., W., Piff, P., K., & Keltner, D. (2011). Social class as culture the convergence of resources and rank in the social realm. *Current Directions in Psychological Science*, *20*, 246-250.
- Kunstman, J., W., & Maner, J., K. (2011). Sexual overperception: power, mating motives, and biases in social judgment. *Journal of personality and social psychology*, *100*, 282-294.
- Lanzetta, J., T., & Englis, B., G. (1989). Expectations of cooperation and competition and their effects on observers' vicarious emotional responses. *Journal of Personality and Social Psychology*, *56*, 543-554.
- Larrick, R., P., Burson, K., A., & Soll, J., B. (2007). Social comparison and confidence: When thinking you're better than average predicts overconfidence (and when it does not). *Organizational Behavior and Human Decision Processes*, *102*, 76-94.
- Latané, B., Williams, K., & Harkins, S. (1979). Many hands make light the work: The

- causes and consequences of social loafing. *Journal of personality and social psychology*, 37, 822-832.
- Leary, M., R., Tambor, E., S., Terdal, S., K., & Downs, D., L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68, 518-530.
- Lewicki, R., J., Litterer, J., A., Minton, J., W., & Saunders, D., M. (1994). Negotiation, 2nd edn. Burr Ridge, IL: Irwin.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75, 5-18.
- Locke, E., A., & Latham G., P. (1990). *A theory of goal setting and task performance*. Englewood Cliff, New Jersey: Prentice Hall.
- Lockwood, P., Jordan, C. H., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, 83, 854-864.
- Lockwood, P., Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73, 91-103.
- Lopes, L., L., & Oden, G., C. (1999). The role of aspiration level in risky choice: a comparison of cumulative prospect theory and SP/A theory. *Journal of Mathematical Psychology*, 43, 286-313.
- Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational behavior and human decision processes*, 65, 272-292.
- Luttmer, E., F. (2005). Neighbors as negatives: Relative earnings and well-being. *The Quarterly Journal of Economics*, 120, 963-1002.
- Madsen, D. (1994). Serotonin and social rank among human males, in the

- neurotransmitter revolution: Serotonin, social behavior, and the law, Roger Masters and Michael McGuire, (Eds.), Carbondale, Illinois: Southern Illinois University Press, 146-158.
- Major, B., Schiaccitano, A., M., & Crocker, J. (1993). Ingroup vs. outgroup comparisons and self-esteem. *Personality and Social Psychology Bulletin*, *19*, 711-721.
- Manis, M., & Paskewitz, J., R. (1984). Judging psychopathology: Expectation and contrast. *Journal of Experimental Social Psychology*, *20*, 363-381.
- March, J., G. (1988). Variable risk preferences and adaptive aspirations. *Journal of Economic Behavior and Organization*, *9*, 5-24.
- March, J., G., & Shapira, Z. (1992). Variable risk preferences and the focus of attention. *Psychological review*, *99*, 172-183.
- Marsh, H., W., & Parker, J. (1984). Determinants of student self-concept: Is it better to be a relatively large fish in a small pond even if you don't learn to swim as well? *Journal of Personality and Social Psychology*, *47*, 213-231.
- Marsh, H., W., Trautwein, U., Lüdtke, O., & Köller, O. (2008). Social comparison and big-fish-little-pond effects on self-concept and other self-belief constructs: Role of generalized and specific others. *Journal of Educational Psychology*, *100*, 510-524.
- Martin, J. (1986). The tolerance of injustice. In J. M. Olsen, C. P. Herman, & M. P. Zanna (Eds.), *Relative deprivation and social comparison: The Ontario Symposium: Vol. 4* (pp. 217-242). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.
- Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. *Journal of Marketing Research*, *45*, 633-644.

- Menaghan, E. (1982). Measuring coping effectiveness: A panel analysis of marital problems and coping efforts. *Journal of Health and Social Behavior, 23*, 220-234.
- Messé, L., A., & Watts, B., L. (1983). Complex nature of the sense of fairness: Internal standards and social comparison as bases for reward evaluations. *Journal of Personality and Social Psychology, 45*, 84-93.
- Messick, D., M., & Cook, K., S. (1983). Theories of Equity: Psychological and Sociological Perspectives. New York: Praeger.
- Morse, S., & Gergen, K., J. (1970). Social comparison, self-consistency, and the concept of self. *Journal of Personality and Social Psychology, 16*, 148-156.
- Mussweiler, T., Ruther, K., & Epstude, K. (2004). The ups and downs of social comparison: Mechanisms of assimilation and contrast. *Journal of Personality and Social Psychology, 87*, 832-844.
- Nisbett, R., & Ross, L. (1980). Human Inference: Strategies and Shortcomings of Social Judgment. New Jersey: Prentice-Hall, Inc.
- Nordgren, L., F., & McDonnell, M., H., M. (2011). The Scope-Severity Paradox: Why doing more harm is judged to be less harmful. *Social Psychological and Personality Science, 2*, 97-102.
- Nosanchuk, T., A., & Erickson, B., H. (1985). How high is up? Calibrating social comparison in the real world. *Journal of Personality and Social Psychology, 48*, 624-634.
- Ordóñez, L., D., Connolly, T., & Coughlan, R. (2000). Multiple reference points in satisfaction and fairness assessment. *Journal of Behavioral Decision Making, 13*, 329-344.
- Ordóñez, L., D., Schweitzer, M., E., Galinsky, A., & Bazerman, M., H. (2009). Goals

- gone wild: How goals systematically harm individuals and organizations. *Academy of Management Perspectives*, 23, 6-16.
- Oswald, A., J. (1983). Altruism, jealousy and the theory of optimal non-linear taxation. *Journal of Public Economics* 20, 77-87.
- Parducci, A. (1968). The relativism of absolute judgment. *Scientific American*, 219, 84-90.
- Parducci, A. (1995). Happiness, pleasure, and judgment: The contextual theory and its applications. Mahwah, New Jersey: Earlbaum.
- Patterson, M., L. (1983). Nonverbal behavior: A functional perspective. New York: Springer-Verlag.
- Pearlin, L., I., Lieberman, M., A., Menaghan, E., G., & Mullan, J., T. (1981). The stress process. *Journal of Health and Social Behavior*, 22, 337-356.
- perceptions: Role of generalized and specific others. *Journal of Educational Psychology*, 73, 307-317.
- Perloff, L., S., & Fetzer, B., K. (1986). Self-other judgments and perceived vulnerability to victimization. *Journal of Personality and social Psychology*, 50, 502-510.
- Pettigrew, A., M. (1967). Social evaluation theory: Converge and application. Pp. 241-315. In *Nebraska Symposium of Motivation*. Lincoln: University of Nebraska Press.
- Piff, P., K., Kraus, M., W., Côté, S., Cheng, B., H., & Keltner, D. (2010). Having less, giving more: the influence of social class on prosocial behavior. *Journal of personality and social psychology*, 99, 771-784.
- Piff, P., K., Stancato, D., M., Côté, S., Mendoza-Denton, R., & Keltner, D. (2012). Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences*, 109, 4086-4091.

- Podolny, J. (2005). *Status Signals*. Princeton, New Jersey: Princeton University Press.
- Pommerehne, W., W., & Weck-Hanneman, H. (1996). Tax rates, tax administration and income tax evasion in Switzerland. *Public choice*, 88, 161-170.
- Poortvliet, P., M., Janssen, O., Van Yperen, N., W., & Van de Vliert, E. (2009). Low ranks make the difference: How achievement goals and ranking information affect cooperation intentions. *Journal of Experimental Social Psychology*, 45, 1144-1147.
- Reyna, V., F., & Brainerd, C., J. (2008). Numeracy, ratio bias, and denominator neglect in judgments of risk and probability. *Learning and Individual Differences*, 18, 89-107.
- Reynolds, K., J., Haslam, S., A., & Turner, J., C. (2012). Prejudice, social identity and social change: Resolving the Allportian problematic. Beyond the prejudice problematic: *Extending the social psychology of conflict, inequality and social change*, 48-69.
- Rick, S., & Loewenstein G. (2008). Commentaries and rejoinder to the "Dishonesty of honest people". *American Marketing Association*, 65, 645-653.
- Rogers, T., B. (1981). A model of the self as an aspect of the human information-processing system. In N. Cantor & J. E Kihlstrom (Eds.), *Personality, cognition and social interaction* (pp. 193-214). Hillsdale, New Jersey: Erlbaum.
- Salovey, P., & Rodin, J. (1984). Some antecedents and consequences of social-comparison jealousy. *Journal of Personality and Social Psychology*, 47, 780-792.
- Schwieren, C., & Weichselbaumer, D. (2010). Does competition enhance performance or cheating? A laboratory experiment. *Journal of Economic Psychology*, 31, 241-253.

- Seaton, M., Marsh, H., W., & Craven, R., G. (2009). Earning its place as a pan-human theory: Universality of the big-fish-little-pond effect across 41 culturally and economically diverse countries. *Journal of Educational Psychology, 101*, 403-419.
- Shah, J., Y. (2003). Automatic for the people: How representations of significant others implicitly affect goal pursuit. *Attitudes and Social Cognition, 4*, 661-681.
- Shalvi, S., Eldar, O., & Bereby-Meyer, Y. (2012). Honesty requires time (and lack of justifications). *Psychological science, 23*, 1264-1270.
- Small, D., A., & Loewenstein, G. (2003). Helping a victim or helping the victim: Altruism and identifiability. *Journal of Risk and Uncertainty, 26*, 5-16.
- Smith, H., J., Pettigrew, T., F., Pippin, G., M., & Bialosiewicz, S. (2012). Relative Deprivation A Theoretical and Meta-Analytic Review. *Personality and Social Psychology Review, 16*, 203-232.
- Smith, R., H., & Kim, S., H. (2007). Comprehending envy. *Psychological bulletin, 133*, 46-64.
- Smith, R., H., Diener, E., & Wedell, D., H. (1989). Intrapersonal and social comparison determinants of happiness: a range-frequency analysis. *Journal of personality and social psychology, 56*, 317-325.
- Smith, R., H., Kim, S., H., & Parrott, W., G. (1988). Envy and jealousy semantic problems and experiential distinctions. *Personality and Social Psychology Bulletin, 14*, 401-409.
- Smith, R., H., Parrott, W., G., Ozer, D., & Moniz, A. (1994). Subjective injustice and inferiority as predictors of hostile and depressive feelings in envy. *Personality and Social Psychology Bulletin, 20*, 705-711.
- Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment

- and choice. *Journal of Experimental Social Psychology*, 27, 76-105.
- Stevenson, B., & Wolfers, J. (2008). Economic growth and subjective well-being: Reassessing the Easterlin paradox (No. w14282). National Bureau of Economic Research.
- Schweitzer, M., E., & Gibson, D. (2008). Fairness, feelings and ethical decision-making. Consequences of violating community standards of fairness. *Journal of Business Ethics*, 77, 287-301.
- Sullivan, K., & Kida, T. (1995). The effect of multiple reference points and prior gains and losses on managers' risky decision making. *Organizational Behavior and Human Decision Processes*, 64, 76-83.
- Suls, J., E., & Wheeler, L., E. (2000). Handbook of social comparison: Theory and research. New York: Kluwer Academic Publishers.
- Suls, J., M., Martin, R., & Wheeler, L. (2002). Social comparisons: Why, with whom, and with what effect? *Current Directions in Psychological Sciences*, 11, 159-163.
- Tait, M., Padgett, M., Y., & Baldwin, T., T. (1989). Job and life satisfaction: A reevaluation of the strength of the relationship and gender effects as a function of the date of the study. *Journal of Applied Psychology*, 74, 502-507.
- Tajfel, H., & Turner, J. (1982). Social psychology of intergroup relations. *Annual Reviews in Psychology*, 33, 1-39.
- Taylor, S. E., & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contacts. *Psychological Review*, 96, 569-575.
- Taylor, S., E., & Brown, J., D. (1988). Illusion and well-being: a social psychological perspective on mental health. *Psychological bulletin*, 103, 193-210.

- Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. *Advances in experimental social psychology, 21*, 181-228.
- Tesser, A., & Smith, J. (1980). Some effects of task relevance and friendship on helping: You don't always help the one you like. *Journal of Experimental Social Psychology, 16*, 582-590.
- Tesser, A., Pilkington, C., J., & McIntosh, W., D. (1989). Self-evaluation maintenance and the mediational role of emotion: The perception of friends and strangers. *Journal of Personality and Social Psychology, 57*, 442-456.
- Testa, M., & Major, B. (1990). The impact of social comparisons after failure: The moderating effects of perceived control. *Basic and Applied Social Psychology, 11*, 205-218.
- Thibault, J., W., & Kelley, H., H. (1959). *The social psychology of groups*. New York, New York: Wiley.
- Thornton, D., A., & Arrowood, A., J. (1966). Self-evaluation, self-enhancement, and the locus of social comparison. *Journal of Experimental Social Psychology, 1*, 40-48.
- Tiedens, L., Z., & Fragale, A., R. (2003). Power moves: complementarity in dominant and submissive nonverbal behavior. *Journal of personality and social psychology, 84*, 558-568.
- Turner, J., C, Oakes, P., J., Haslam, A., S., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin, 20*, 454-463.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1124-1131.
- Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic*

- behavior. New Jersey: Princeton University Press.
- Wheeler, L. (1966). Motivation as a determinant of upward comparison. *Journal of Experimental Social Psychology, 1*, 27-31.
- Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology, 62*, 760-773.
- Wheeler, L., Shaver, K., G, Jones, R., A., Goethals, G., R., Cooper, X, Robinson, J., E., Gruder, C., L., & Butzine, K., W. (1969). Factors determining the choice of a comparison other. *Journal of Experimental Social Psychology, 5*, 219-23.
- Willis, J., & Todorov, A. (2006). First impressions: Making up your mind after 100 ms exposure to a face. *Psychological Science, 17*, 592-598.
- Wills, T., A. (1981). Downward comparison principles in social psychology. *Psychological bulletin, 2*, 245-271.
- Wilson, S., R., & Brenner, L., A. (1971). The effects of self-esteem and situation upon comparison choices during ability evaluation. *Sociometry, 34*, 381-397.
- Wood, J., V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin, 106*, 231-248.
- Wood, J., V., Taylor, S., E., & Lichtman, R., R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personality and Social Psychology, 49*, 1169-1183.
- Yamauchi, K., & Temper, D. (1982). The development of a money attitudes scale. *Journal of Personality Assessment, 46*, 522-528.
- Zajonc, R., B. (1965). Social facilitation. Research Center for Group Dynamics, Institute for Social Research, University of Michigan.
- Zell, E., & Alicke, M., D. (2009a). Comparisons over time: Temporal trajectories, social comparison, and self-evaluation. *European Journal of Social*

Psychology, 40, 375-382.

Zell, E., & Alicke, M., D. (2009b). Self-evaluative effects of temporal and social comparison. *Journal of Experimental Social Psychology*, 45, 223-227.

Zhong, C., B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science*, 313, 1451-1452.

Zizzo, D., J. & Oswald, A., J. (2001). Are people willing to pay to reduce others' income? *Annales d'Economic et de Statistique*, 63/64, 39-65.