

Core Self-Evaluations Self-Leadership and the Self-Serving Bias in Managerial Decision Making: A Laboratory Experiment

Matteo Cristofaro

Department of Management and Law, University of Rome 'Tor Vergata', 00133 Rome, Italy

Pier Luigi Giardino

Faculty of Economics, University of Rome 'Tor Vergata', 00133 Rome Italy;

ABSTRACT

The self-leadership construct has received great attention from scholars over the last 40 years due to its capacity to influence personal effectiveness. However despite strongly influencing individuals' self-efficacy performed studies did not determine whether self-leadership is connected and how with the Core-Self Evaluation (CSE) trait a complex personality disposition based on self-efficacy self-esteem locus of control and emotional stability that has been found impacting decision-making processes within organizations. Moreover it has not been identified whether individuals with a high level of self-leadership are more prone to be victims of some cognitive biases in decision-making processes such as the internal attribution of successes and external attribution of failures (i.e. Self-Serving Bias SSB) that are usually led by the strong belief of individuals in their own capacities. The outlined gaps can be substantiated by the following two research questions: "How is self-leadership related with CSE?" and "How does self-leadership influence the attribution of successes/failures?". To answer these questions the following were identified and analyzed for 93 executives: (i) the tendency in the attribution of successes and failures (ii) the CSE and (iii) their self-leadership level. Results show that: (i) a high level of CSE is connected with high levels of self-leadership; (ii) high levels of self-leadership bring individuals to the internal attribution of successes and external attribution of failures. This work reinforces the stream of (the few) studies that considers a high level of CSE and self-leadership as not always being desirable for managerial decision-making processes and consequent performance. This paper aims to enrich the debate concerning the relations between on the one hand self-leadership and on the other hand personality traits between self-leadership and decision making.

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1. INTRODUCTION

"Self-leadership (Manz1986;Manz and Neck2004) is a process through which individuals control their own behavior influencing and leading themselves through the use of specific sets of behavioral and cognitive strategies" (Neck and Houghton2006 p. 270). In other words individuals with high levels of self-leadership are more able through the implementation of behavioral and cognitive strategies (e.g. mental imagery and positive self-talk) to develop personal effectiveness in their private and working lives (Goldsby et al.2020). From the first appearance of this construct in 1983 by Manz a plethora of scholars contributed to the development of self-leadership. The main advancements of this construct are related to the positive influence of self-leadership at the individual level on job performance (Frayne and Geringer2000) job satisfaction (Neck and Manz1996) long-term career success (Murphy and Ensher2001;Raabe et al.2007) lower absenteeism (Frayne and Latham1987) lower work anxiety (Saks and Ashforth1996) and self-efficacy (Latham and Frayne1989;Prussia et al.1998). Regarding the last characteristic the concept of self-efficacy (i.e. the self-estimation of being successful) is of particular importance to self-leadership (Neck and Houghton 2006). Indeed according to self-leadership studies (Manz

1986;Manz and Sims 1986;Manz and Neck 2004;Neck and Manz 1992 1996 2007;Prussia et al.1998) one of the most important goals of self-leadership strategies is to increase self-efficacy perceptions in order to reach high performance levels. However in recent years self-efficacy has been rediscovered as a main personality trait that is part of a more complex construct strongly influencing the behavior of organizational agents at the workplace as well as their decision-making processes i.e. Core Evaluations (Judge et al.1998). This complex personality disposition formed by self-efficacy self-esteem a locus of control and emotional stability is responsible for the judgment about other individuals the external environment and even themselves (Core Self-Evaluations (CSEs) in this last case; (Judge et al.1998;Judge and Bono2001)). Hence it is posited in accordance with the established literature that assumed and proved the antecedent role of personality traits with regard to behavior (Ajzen2005) that CSEs are an antecedent of self-leadership. In this regard and due to the fact that no other contributions to the best of the authors' knowledge have been produced on the relationship between CSEs and self-leadership the following research question emerges to understand how CSEs work as an antecedent of self-leadership: "How is self-leadership related to CSE?".

Moreover stemming from the fact that it has been proved that high self-efficacy leads to cognitive biases in managerial decision making (Stevenson et al.2019;Cristofaro et al.2020) we suggest whether high levels of self-leadership can lead to the occurrence of cognitive errors when making decisions. In particular due to the already discovered relationship between self-efficacy and Self-Serving Bias (SSB) also called Self-attribution bias (used interchangeably within the text) which involves the internal attribution of successes and external attribution of failures (Watt and Martin1994) a second research questions emerges as follows: "How does self-leadership influence the attribution of successes/failures?".

To answer the two above-mentioned research questions a laboratory experiment has been conducted with 93 executives randomly contacted through Amazon Mechanical Turk. In particular the CSE (Judge et al.2003) self-leadership (Houghton and Neck2002) and SSB questionnaires (Libby and Rennekamp2012) have been administered to the executives as well as two generic tasks for stimulating their own evaluation of performance (on the basis of SSB). Thanks to the collected data hypotheses have been tested through two one-way Analysis of Variance (ANOVA). Results of the analysis have revealed that: (i) a high level of CSE is connected with high levels of self-leadership and (ii) high levels of self-leadership bring individuals to the internal attribution of successes and external attribution of failures (i.e. reductions in the SSB).

This work reinforces the stream of (the few) studies that considers a high level of CSE and self-leadership as not always desirable for managerial decision-making processes and consequent job performance (Barker1993;Langfred2004;Hiller and Hambrick2005). Thus this investigation enriches debate about: (i) the relationships between self-leadership and personality traits (Manz and Sims2001; Gilson and Shalley2004;De Jong et al.2006;Stewart et al.2017); and (ii) the relationships between self-leadership and decision making (Houghton et al.2004;Humphrey et al.2007;Behfar et al.2008).

In particular it is advanced that CSEs are an antecedent of self-leadership; thus the degree of the former personality trait influences the process through which individuals control their own behavior influencing and leading themselves through.

In fact this contribution advances that individuals with high levels of self-leadership can be more prone to cognitive errors (Cristofaro et al.2020). Stemming from these results practitioners should not only train themselves and others towards the adoption of self-leadership strategies but also engage in mental processes aimed at enhancing reflection on the correctness of these self-leadership strategies and quality of related decisions (see the checklist of (Kahneman et al.2011)). In other words the accuracy of decision-making processes of individuals with high self-leadership should be checked even more than that of individuals with a low or medium level of self-leadership; this is due to the fact that the greater the adoption of behavioral and cognitive strategies for positively influencing personal effectiveness the greater the risk in wrongly interpreting feedback of their own actions if the feedback is not aligned to what has been desired.

The remainder of the paper is as follows. In Section2 the theoretical background of the work consisting of CSE self-leadership and SSB literature is provided to the readers of Administrative Sciences. Then the hypothesis development section is put forward in which the two above-reported research questions are explained in more detail. Section4 describes the research design data collection and data analysis procedures. Section5 is dedicated to the results produced to verify the developed hypotheses. Finally discussion of the results in light of prior literature the implications for theory and practice and the limitations of the work are provided together with the development of some future research directions.

2. THEORETICAL BACKGROUND

2.1. *Self-Efficacy and Self-Esteem: A Theoretical Premise*

Albert Bandura(1986) defined self-efficacy as directly related with individuals' beliefs in their own personal abilities both at physical and mental levels such as how well they will be capable of managing their skills and cognitive abilities and how much effort they will be able to carry in order to achieve a predetermined goal. According to Bandura et al.(1999) individuals that have a high level of self-efficacy are more frequently expected to perceive challenging duties as something to be mastered instead of perceiving them as something to be bypassed. Consequently individuals with a high level of self-efficacy are more inclined to work hard in order to accomplish their duties even if they have to keep up their endeavors in the long term. However according to Bandura(1997) the perception of self-efficacy mainly depends on the feedback received from other individuals as previously stated by Weinberg et al.(1979) thus: if people receive negative feedback about their physical and mental efficiency they will perform inadequately while if they receive positive feedback they will be likely to show outstanding performances. Yet this feedback which determines the perceived self-efficacy varies according to the situational circumstances of the task that the individual is facing; indeed Bandura stated that: "The extent to which people will alter their perceived self-efficacy on the basis of performance feedback will depend on such factors as the difficulty of the task the amount of effort they expend the amount of external aid they receive the situational circumstances under which they perform and their mood and physical state at the time" (Bandura 1986 p. 363). In contrast to this task-related perception of self-efficacy other scholars have subsequently conceived self-efficacy in a more general dimension that has been called General Self-Efficacy (GSE) (Gardner and Pierce 1998; Judge et al. 1998) which within this work is the meaning adopted when speaking about self-efficacy. GSE can be described as the attitude of an individual's belief in one's global capacity to face challenges across a broad range of circumstances (Judge et al. 1998; Scherbaum et al. 2006). This stream of studies assumes that GSE is able to catch distinctive variations among people in their propensity to see themselves as able to manage and achieve different goals in different contexts; thus GSE is a 'situation-independent context belief' rather than a fluctuant perception of their own abilities. However GSE and specific self-efficacy are linked by a high inter-relationship (Judge et al. 1998, 1999). Indeed various studies demonstrated that GSE and specific self-efficacy are positively correlated as well as the former having been found to be a determinant of the latter (Chen et al. 2001; Scherbaum et al. 2006).

In relation to self-efficacy other scholars defined and advanced the concept of self-esteem conceived as the whole set of personal introspective beliefs that people have about themselves as well as their perception about the emotional states affecting both their professional and personal lives (Smith et al. 2007). In particular some scholars (Leary and Baumeister 2000) identified that self-esteem can be used for testing the perception that individuals have about a specific personal quality i.e. "I believe I am a good student and I feel satisfied about that or about a global evaluation of themselves i.e. "I believe I am not a good person and I feel bad about myself in general". Due to the obvious link between the evaluation that a person can make about her/himself in general or about a specific quality (self-esteem) and the evaluation that the same person can make about her/his abilities (self-efficacy) it has been derived and proved that self-esteem is often directly affected by self-efficacy (Judge and Bono 2001; Lane et al. 2004; Asakereh and Yousofi 2018). Indeed the perception that people make about their own abilities is influenced by the feedback received from others around them about their reached performance affecting the perception of their own worth.

Thanks to the huge number of existing studies self-efficacy and self-esteem are two of the four main personality traits investigated within the domain of industrial and organizational psychology (Judge et al. 1998) which is then aggregated under the same umbrella term (trait) called Core Evaluations.

2.2. *Core Self-Evaluations*

Decision-making processes essentially depend on two intertwined factors: the internal/external environment of the organization and the behavior of the decision maker (Abatecola and Cristofaro 2019). This second cluster includes several variables like emotions and individual tendencies i.e. personality traits (Paniccia 2002; Cristofaro 2016, 2017a, 2019, 2020; Basic-Sontic et al. 2017). Among the whole set of individual tendencies scholars have identified four elements i.e. self-efficacy self-esteem (the general esteem an individual has with respect to himself/herself) locus of control (i.e. the conviction in controlling life's variables) and emotional stability (the capacity to maintain a low neuroticism level) which have a proved capacity of mainly affecting decision-making processes within organizations (Judge et al. 1998).

Judge et al.(1998) exemplified that these elements are completely inter-related resulting in the conceptualization of Core Evaluations (CE) a complex trait that is responsible for judgment about other individuals the external environment and even themselves in this last case it is referred to as Core Self-Evaluations or simply CSEs (Judge et al. 1998; Judge and Bono 2001). The investigations done by the adoption of the CE construct consider in practice the main role of the 'human factor' in the workplace

(Judge et al.2009). In this regard research that has used this construct arrived at the conclusions that if the decision maker judges himself/herself extraordinarily high in this construct (i.e. high CSE) he/she will be extremely confident about competences decision-making skills (Hollenbeck et al.1988;Judge et al.1998;Judge and Bono2001;Silvester et al.2002) job commitment (Erez and Judge2001) career performance goals reached earnings and job-related prominence (Judge and Hurst2008). Basically the CSE construct delineates that people who are extremely confident in their skills and persevere in their long lasting efforts towards their goals are driven to reach impressive results in their work experience receiving huge earnings and also playing out illustrious roles in society (Cristofaro2017b).

Following the above-mentioned studies Hiller and Hambrick(2005) were the first to delve deeper into the connections between top managers' CE and the strategy of organizations; from this research scholars expected that top managers with a high level of CSE would reveal this innate personality factor in their performance in the workplace. In particular it has been assumed that executives with a high degree of CSE strongly consider their skills as the main contributing factor to achieve great job performance. This assumption lies in the belief that executives with an extraordinarily high degree of CSE are generally less prone to anxiety also showing less concern with respect to pessimistic forecasts because there is the belief that they can overcome adversities and solve all the problems they are called to face. In conclusion hyper-CSE top managers are self-confident in their ability to triumph in both professional and personal circumstances.

In recent years a growing number of studies in management and organization have investigated the CSE construct. For example Wang and Xu(2019) found through the study of 377 employees that ethical leadership is effective in eliciting work meaningfulness and attitudes for employees with higher CSE or when perceived organizational support (POS) is lower and is ineffective for those with lower CSE or when POS is higher. YetZhang et al.(2020) discovered using a sample of 200 researchers and their supervisors that employee knowledge sharing behavior works as a mechanism that links CSE to creativity. In particular they identified the novel moderating role of work meaningfulness in the relationship between CSE and knowledge sharing and the indirect effect of CSE on creativity due to knowledge sharing.

Few studies however have inspected the link between CSE and decision-making process variables. One of these is the contribution of Cristofaro et al.(2020) through the test of a sample population of 120 Master's degree students who were involved in a business game and were challenged in making strategic choices (in teams) playing the role of executives of a small-sized corporation. The authors found that a huge level of CSE is positively related to an intuitive decision-making process and a high degree of performance in the workplace. However they also found that teams having a medium level of CSE obtained greater results than teams with high CSE. Moreover they also found that having a significant degree of CSE can lead to a fall in behavioral biases. In sum this recent study significantly undermined the established view that there is only a positive relationship between CE and organizational agents' behavior in the workplace.

2.3. *Self-Leadership*

The self-leadership concept first appeared in a 1983 practitioner-oriented book (Manz1983) but it was only in 1986 that Manz formally defined it as the process through which individuals control their own behavior influencing and leading themselves through the use of specific sets of behavioral and cognitive strategies. It is worth stating from the beginning that self-leadership is distinct from the concept of autonomy; indeed the latter is a need together with freedom which forms the basis for self-leadership (Stewart et al.2019). These two therefore are variables that are inter-related with each other but do not underline the same phenomena; on the contrary they should be well combined in order to avoid dysfunctional results (Langfred2005). On this relationship between self-leadership and autonomy through the study of 71 self-managed teams composed of MBA students Langfred(2004) found that members of self-leading teams are generally reluctant to monitor each other given their effort to maintain high individual autonomy which leads to poor performance when individual autonomy is high and to excellent performance when individual autonomy is low. In another study of longitudinal data from 35 self-managing teams Langfred(2007) confirmed that very high self-leadership undermines individual autonomy thus further advancing a negative relationship between self-leadership and autonomy.

The behavioral and cognitive strategies of self-leadership are designed to positively influence personal effectiveness which is necessary to accomplish both private and professional goals (Manz 1986;Manz and Neck2004). Then in 1987 the first empirical study was conducted to examine self-leadership in an organizational setting which aimed to examine the role of self-leadership in the context of both empowering leadership and self-managing teams (Manz and Sims1987). This latter study suggested that the most effective external leaders of self-managing work teams are those that engage in behaviors that facilitate self-leadership strategies such as self-observation self-goal setting and self-reward therefore firstly proving the positive effect of self-leadership in management and organizational activities.

A few years later self-leadership's 'thought pattern strategies' were more fully developed and expanded under the label "thought self-leadership" which is the method that facilitates employees in reaching goals of

wellbeing and superior efficiency especially when facing dynamic work scenarios through focusing on the beneficial sides of a diversified labor force (Manz and Neck 1991; Neck and Manz 1992). The practical usefulness of the more fully developed thought self-leadership strategies was later demonstrated in a training-intervention based on field study (Neck and Manz 1996). The results of this contribution suggest that individuals who received the thought self-leadership training experienced increased mental performance increased positive affect (enthusiasm) increased job satisfaction and decreased negative affect (nervousness) relative to those not receiving the training (Neck and Manz 1996).

Self-leadership strategies are commonly classified into three essential groups: (i) behavior-focused strategies (ii) natural reward strategies and (iii) constructive thought pattern strategies (Manz and Neck 2004; Manz and Sims 2001; Prussia et al. 1998). The first category seeks to enhance the personal self-awareness with the aim of assisting behavioral management particularly when people have to face indispensable but obnoxious duties (Manz and Neck 2004). In a nutshell the strategies belonging to the first listed category on the one hand are constructed to stimulate positive and useful performances aimed to achieve advantageous outcomes and on the other hand they are designed to mitigate the impact of unfavorable attitudes that could generate disastrous outcomes (Neck and Houghton 2006).

The second category listed strategies related with scenarios where people are stimulated or remunerated by intrinsically pleasant features of the duties they are called to manage (Manz and Neck 2004; Manz and Sims 2001). Several investigations showed that there are two dominant natural reward approaches. The first approach is associated with the creation of gratifying elements in a specific set of activities to perform so that the duties easily become worthwhile (Manz and Neck 2004; Manz and Sims 2001). The second approach concerns the methodology of shaping feelings by shifting the focus from the negative to the most fruitful feature of the duty to accomplish (Manz and Neck 2004; Manz and Sims 2001). Both approaches are inclined to generate awareness of proficiency and self-determination which constitute two fundamental methods of self-motivation. In summary the strategies in the second category are aimed to foster feelings that serve to empower task-related performances (Neck and Houghton 2006).

The third category is designed to group all the methods aimed to promote the creation of constructive thought patterns and automatic shortcuts that can effectively affect performances (Manz and Neck 2004; Neck and Manz 1992). Constructive thought pattern strategies concern the analysis of defective knowledge mental symbolism and positive self-talk. In fact people who foresee profits coming from the accomplishment of a task are more inclined to approach it with a positive and successful mindset (Manz and Neck 2004). This concept was investigated by Driskell et al. (1994) when conducting a meta-analysis of 35 experimental tests aiming to support the impact of the third category of self-leadership strategies.

Manz (1986) introduced a new point of view indicating that the self-leadership mechanism starts when people measure the ongoing conditions of an event against self-set expectations concerning the same scenario analysis. Even if the course depicted by Manz (1986) is related with the organizational control systems in broad terms when it affects self-leadership the mechanism of supervision is basically self-imposed instead of being administered externally. Under this lens self-leadership can literally be depicted as an essential decisive even core feature of both organizational psychology and behavior (Stewart et al. 2019).

Apart from analyzing the effects of self-leadership in organizations scholars have also investigated the antecedents of self-leadership both at the individual and group levels; these forces can be mainly classified by their nature i.e. internal or external (Stewart et al. 2011). With regard to internal antecedents at the individual level studies have demonstrated that they are crucial for individual self-leadership such as internal or natural rewards and 'thought self-leadership' (a means for individuals to manage their own thinking tendencies). In particular people who choose their work position with internal or natural rewards or embed their career with spontaneously exciting duties are expected to be self-leading in the workplace (Neck and Manz 1996). Furthermore internal antecedents of self-leadership can also be found at the group level; in fact if within the group there is a high degree of cohesion both benefits and penalties are more likely to become self-reinforcing (Barker 1993; Stewart et al. 2012). Yet numerous external antecedents have an impact both at the individual and group level of self-leadership. At the individual level for instance Stewart Greg L. and Cardy (1996) demonstrated that self-leadership coaching was notably beneficial for those people who have a low level of scrupulousness (Frayne and Geringer 2000; Frayne and Latham 1987; Latham and Frayne 1989). Another important source of external antecedents comes from the national culture which leads people to have considerable discrepancies in the adoption of self-leadership and it also touches the intrinsic connotation of self-leadership inside that specific national scenario (Stewart et al. 2019). For example Neubert and Wu (2006) found that certain self-leadership strategies such as self-goal setting were more adopted in the Chinese context rather than in Western countries while other self-leadership strategies such as self-observation were more used in Western countries rather than in China.

Moreover apart from national cultural norms, the structure of the organization is also very important; in fact, it can represent a clear example of external antecedents, as investigated by Manz et al. (2009). In particular

they found that groups that work in a context of high-involvement as well as those in organizations that have a lower degree of centralization and formalization have a better chance to be effective in terms of self-leadership especially if they are based on a benefit mechanism architecture in which they are likely to be effective promoters of self-management.

Abundant research has disclosed the beneficial consequences of self-leadership on the results coming from the work environment both at individual and group levels (Cohen et al.1997;Manz and Sims1987;Uhl-Bien and Graen1998). At the individual level it appears that self-leadership is a crucial element to achieve outstanding career achievements (Murphy and Ensher2001;Raabe et al.2007). In fact a high level of self-control has been explicitly associated to a positive employee's mindset and feelings e.g. low mental pressure and apprehension with the consequence of increasing the degree of self-efficacy (Latham and Frayne1989;Prussia et al.1998;Saks and Ashforth1996). Thus it can be deduced that self-leading workers are likely to have a prosperous career directly related to their expected higher degree of productivity commitment (Stajkovic and Luthans1998) and job gratification (Neck and Manz1996;Uhl-Bien and Graen1998) as well as a lower level of absenteeism from the workplace (Frayne and Latham1987;Latham and Frayne1989).

At the group level the consequences of self-leadership on performance results are not fully definitive; in fact, the beneficial effects concerning the implementation of self-leading groups have been supported in some studies on group level productivity (Cohen and Ledford 1994;Cordery et al.1991;Elmuti and Kathawala 1997;Fredendall and Emery 2003;Stewart and Barrick 2000;Trist et al.1977;Wall et al.1986). However, another stream of scholars has not depicted, generally, such a positive level of performance from the formation of groups with high self-leadership. For instance DeVaro(2006) found that meticulously coached groups produce results comparable to those of groups with a high degree of self-control. Yet, a meta-analysis, made from the outcomes of eight tests and performed by Combs et al.(2006), showed that just a moderate connection existed from implementation of self-leadership in groups and their level of efficiency in achieving their planned goals. To conclude, while outcomes from the analysis of the effects related to the application of the self-leadership methodology at the individual level mostly agree with the benefits derived, at the group level the results hint that self-leadership may not be directly related with positive repercussion on productivity and efficiency (Stewart et al.2011).

2.4. *Self-Serving Bias*

A 'bias' represents divergence from what is identified as a rational decision (Kahneman and Tversky1974) and this general classification of deviations from rationality is adopted for both cognitive traps (i.e., mental inaccuracies) and heuristics (i.e., cognitive shortcuts) (Cristofaro2017a,2018). The first category, cognitive traps, was originally and properly described by Hammond et al.(1998). In particular, these scholars identified the frequently occurring traps, such as the anchoring trap, causing top managers' wrong judgment about the decisions to take. The second category, heuristics, was firstly conceptualized by Kahneman and Tversky(1974,1979) in their heuristics and biases' research program. Their behavioral tests showed that rational shortcuts arise in decisions characterized by unclarity or complexity, derived from the presence of enormous, or insufficient, quantities of information to bear in mind during the decision-making process (Kahneman and Tversky1974,1979).

Nevertheless, traps and heuristics produce different outcomes affecting the decision-making process. In fact, the results of some research showed a constantly negative impact coming from traps, while heuristics are characterized by alternating positive/negative impacts (Abatecola et al. 2018). Additionally, thanks to the ecological rationality view and research program of Gigerenzer and Todd(1999), heuristics have been found to lead, in some circumstances and under some conditions, to superior judgments rather than to adopting complex approaches in order to drive a decision (e.g., logistic regression Luan et al.2019).

Among biases, one of the most studied ones has been the Self-Serving Bias (SSB) (Abatecola et al. 2018).Heider(1958) is considered as the scholar who first articulated the concept of self-serving bias (SSB), recognizing that in scenarios characterized by uncertainty, human behavior is affected by mental strategies which aim to protect or enhance individuals' self-perceptions (Greenberg1991;Greenwald 1980;Greenberg et al.1982;Sedikides et al.1998;Sedikides and Strube1995,1997;Weary-Bradley 1978,1979;Zuckerman1979). In particular, SSB occurs when people assign personal credit to their

achievements, while they assign the causes of their failures to external factors a phenomenon that diffusely affects human behavior, as demonstrated by Campbell and Sedikides(1999) and Allen et al.(2020) in their meta-analysis of a large segment of research about SSB. Individuals that fall into the SSB usually have a high level of self-confidence, which depicts them as being more competent than they are in reality, leading to exceedingly rosy plans for the future Larwood and Whittaker (1977) originally proved this relationship within two teams, respectively comprising management undergraduates and corporate executives. It appeared that the undergraduates constantly overvalued their skills during the marketing simulation game; those students were confidently arguing that the imaginary firm they were running would rapidly overwhelm their competitors.

Equally, the executives were also envisioning incredible achievements; nevertheless, they were mitigating the forecast if the previous planned outcomes were inadequate Libby and Rennekamp (2012) found similar results by demonstrating that people affected by self-serving attribution address greater importance to internal rather than external factors to achieve outstanding results. This attitude heightens trust in their own capabilities, which are directly related to their enthusiasm and confidence in betting on the future.

In addition Libby and Rennekamp(2012) found that other traits, such as dispositional optimism and miscalibration, also strengthen the degree of confidence in enhancing forthcoming predictions of future earnings and performances and in their different attributions according to the outcome presented. Yet Chin et al.(2018)analyzed the link between SSB and the better-than-average effect (BTA) evaluating themselves more positively than they evaluate most other people as well as its consequences on trading choices. Their analysis was aimed to assess methods to diminish the behavioral and trading biases in financial market activities Chin et al.(2018) have found that people with SSB show a higher level of BTA compared with those affected by the absence of SSB. In brief, SSB and confidence, within their own capabilities, are two inter-related phenomena that influence each other and do not lead to a rational assessment of performance.

Moreover, apart from the influence of other personal traits, the manifestation of SSB has also been found to be connected with external environment changes. In this vein Keusch et al.(2012) investigated the impact of SSB in the annual reports addressed to the investors of most highly capitalized European corporations between 2006 and 2008. The conclusions emanating from their investigation indicated that during a period of crisis, executives have a greater propensity to adopt SSB attitudes than in a period of no crisis. Furthermore, in discordance to the conclusions stated by D'Aveni and MacMillan(1990), Keusch et al.(2012) revealed that acclaiming and defensive ascription behaviors are undoubtedly adopted more during a period of crisis rather than when the economic, financial, and organizational equilibrium of a company is under control. Regarding the allusions about the external environment, the outcomes presented by Keusch et al.(2012) indicated that in 2008, corporations adopted much more justifications associated with the external environment than in 2006. Thus, these outcomes clearly suggest that the elements coming from the external environment were manipulated in order to separate executives' conduct from the negative results that occurred and, consequently, highlighted their ability to produce effective results, regardless of the adverse external environment.

3. HYPOTHESIS DEVELOPMENT

Hayward and Hambrick(1997) adopted an overall hubris index, very sensitive to the variation of hubris, in order to measure a wide range of variables related with fortuitous events and individuals' behaviors, indicating the necessity for a psychometrically founded and recognized construct for considering the uncommon self-confidence in many top managers. In this regard Hiller and Hambrick (2005) defined hyper-CSE (a very high level of CSE) as the useful variable to accurately test that construct. The apogee limit of CSE may be contemplated as a meticulously confirmed 'hubris factor' substantiating a strong belief of top managers in their own capacities and building their own future. This has been empirically found, despite investigating potential employees rather than executives, by Wanberg et al.(2005). In particular these scholars conducted sample tests on a large group of job seekers in order to analyze their behavior in a very stressful situation, such as unemployment. From their research, it appeared that CSE directly affects perseverance in looking for a job position: a high level of CSE is beneficial for showing above average levels of persistence when searching for employment over the period of unemployment. Thus, a high level CSE can, doubtless, be related with a more positive attitude to face situations that undermine the mind and the spirit of people or at least it appears to be so according to recruiters' perceptions (Cristofaro2017b).

Continuing along the link between CSE and self-development Kim et al.(2012) inspected if and how CSE influences learning inclination and efficiency. In particular, through a lengthwise model and data collected from a sample of over 600 undergraduates Kim et al.(2012) demonstrated that CSE truly and positively influences self-efficacy ($r = 0.33$), the learning target level ($r = 0.15$), and the learning target commitment ($r = 0.38$). In other words, CSE is an antecedent of self-development within the learning context. Similarly McKinney(2014) investigated a sample group of over 300 undergraduates from several US universities in order to inspect whether the levels of goal orientation and CSE are complementary to undergraduates' Grade Point Average (GPA), study routine, and learning performance. Results of the analyses showed that goal orientation and CSE are pivotal predictors of students' performance due to the positive correlation among these variables. In addition McKinney (2014) pointed out some intriguing conclusions, such as the fact that goal orientation and CSE causes additional improvement to the undergraduates' performance, exceeding the self-regulatory variables. In other words, the person who reaches the greatest values in self-regulation is also a person with a high level of CSE. This last statement also finds support in the work of Paunova(2017) who, through the investigation of more than 200 people from 46 nationalities employing 36 self-managed groups, concluded that both language skills and CSE are related with an increase in leadership status. In fact, team members seek to appoint, as group leaders, people

who embody the idea of a leader (Bass and Stogdill 1990), notably when they have particular skills such as dynamism, extreme ownership, confidence, and, last but not least, linguistic proficiency. Thus Paunova (2017) demonstrated that people who gain high positions inside multinational teams are characterized by a high level of CSE, which undoubtedly affects the positive link between their linguistic competence and leadership status. CSE is also related to measures of persistence in individuals' leadership goals at both a personal and professional level (i.e., self-development); in this latest case, this relationship involves an increase in the leadership status. In this regard, it is worth noticing that self-development and orientation to accomplish both private and professional goals (Manz 1986; Manz and Neck 2004) can be found at the basis of the self-leadership concept. Accordingly:

Hypothesis 1 (H1). Individuals with high CSE have greater self-leadership compared to individuals with low and average CSE.

Silver et al. (1995) investigated the link between job performance and outcome attribution the basis of SSB through the mitigating effect of self-efficacy. In doing so, they delivered practical problems, similar to those presented during the Graduate Management Admission Test (GMAT) exams, to a sample of 100 undergraduate students. The results of this investigation revealed the importance of reaching high levels of job performance and of how people understand the reasons for their performance. In fact, it appeared that different self-efficacy expectations emerge in divergent acknowledgments of performance, directly affecting the guesses: outstanding performances are associated with subjective aspects that boost the self-beliefs of efficacy; negative performance, instead, leads to a decrease in self-belief (Watt and Martin 1994). Thus, from the study carried out by Silver et al. (1995), we can hypothesize that when people truly believe in their capabilities thus demonstrating a high level of self-efficacy (at the basis of the CSE) and they achieve successful goals both in their private and professional lives, they are automatically more likely to experience SSB bias than people with an average-medium level of CSE. Yet Campbell and Sedikides (1999), who collected data from over 6900 participants, studied the effects of the SSB in the workplace, also investigating a wide range of moderators, such as self-esteem, locus of control, gender, and job position. In particular, this study showed that people, according to their level of self-esteem, react in a different manner when they have to face negative outcomes: those with a high level of self-esteem are likely to behave more defensively (Baumeister et al. 1993, 1996; Blaine and Crocker 1993), embodying this defensiveness via an emphasized level of SSB. In contrast, people with a small degree of self-esteem did not fall into the SSB. Another important moderator element investigated by Campbell and Sedikides (1999) concerns success ambition. In fact, these scholars demonstrated that people with a large degree of success ambition a personal orientation towards self-leadership are affected by high levels of self-threat, leading them to be more likely to fail in SSB. Implicitly, stemming from the fact that self-esteem is one of the four dispositions at the basis of the CSE trait, we can assume that people with a high level of CSE are inclined to allocate the responsibility of their failures to external factors.

An important element to bear in mind when scholars want to assess the inclination of individuals to be victim of SSB involves self-enhancement which represents a whole set of mental activity actions aimed to establish, preserve, or augment a positive self-image (Kwan et al. 2004) at the basis of the self-leadership concept. Hence, some scholars investigated the impact of self-enhancement on the private and professional lives of people (Dunning 1999; Taylor and Brown 1988). For example, Sedikides (1993) showed that people pursue self-knowledge, a pillar of self-enhancement, in order to achieve laudatory outcomes, leading to internally attributing successes and externally attributing failures. Hence, from the work of Sedikides (1993), it can be again derived that people with high self-enhancement, which are thus strongly oriented towards self-leadership, tend to internally attribute success and externally attribute failures.

Finally, it is worth noticing that the SSB is a viable trait for manifesting both self-enhancement and self-protection (Campbell and Sedikides 1999; Mezulis et al. 2004). In fact Sedikides and Alicke (2012) argued that this aspect, on the one hand, requires taking more consideration than one merits for positive results (i.e., self-enhancement) and, on the other hand, fails to take sufficient liability for negative results (i.e., self-protection). Thus, the attempt to boost the benefits of positive results of their own actions is directly connected with self-enhancement, with the consequential increase in the perception that individuals have of their own abilities. In contrast, attempting to deflect responsibility for negative results is correlated with self-protection, which can be perceived as the aim of not reducing their self-esteem and, consequently, the evaluation that people make about them. From what has just been reported and stemming from the fact that: "A major objective of all self-leadership strategies is the enhancement of self-efficacy perceptions in advance of higher performance levels" (Neck and Houghton 2006, p. 279), it can be derived that:

Hypothesis 2 (H2). Individuals with great self-leadership are more inclined to be victims of the self-serving bias compared to individuals with low and average self-leadership.

4. METHODOLOGY

To test the three developed hypotheses and answer the research paper's aim, 93 managers (50 male, 43 female, Average Age = 39.3 years, Standard Deviation (SD) = 1.9 years, Average working experience at a managerial position: 8.2 years, Standard Deviation (SD) = 1.1 years) were sampled through Amazon Mechanical Turk. In particular, Amazon Mechanical Turk is a "crowdsourcing marketplace that makes it easier for individuals and businesses to outsource their processes and jobs to a distributed workforce who can perform these tasks virtually. This could include anything from conducting simple data validation and research to more subjective tasks like survey participation, content moderation, and more" (Mturk2020). Due to its features, this platform has been extensively used by scholars for collecting reliable responses for experiments on executives (Paolacci et al.2010).

In line with other similar works (Cristofaro et al.2020) in research fields at a stage of development far from the nascent one (Edmondson and McManus2007), the laboratory experiment followed by quantitative analysis has been considered as the most suitable research design. Emerging from reviews on self-leadership, such as Neck and Houghton(2006), these intermediate or mature fields of research like the role of personal traits in self-leadership are challenged by "focused questions and/or hypothesis relating existing constructs" (Edmondson and McManus2007, p. 1260). Each participant of the experiment was administered with the 12-item CSE Scale (CSES) (AppendixA) to measure their CSE degree, the 35-items of the Revised Self-Leadership Questionnaire (RSLQ), the Cristofaro (2016) managerial task, and the Self-attribution bias questionnaire of Libby and Rennekamp(2012). In particular, the measurement of variables at the center of the developed hypotheses was measured as follows.

Core Self-evaluations: The CSE score of each manager was derived by asking participants to complete the 12-item Core Self-Evaluations Scale (CSE by (Judge et al.2003) reported in AppendixA; test-retest accuracy was 0.81 over a one-month span). This scale provides an explicit and integrative estimation of a person's core self-evaluation. In particular, each participant was asked to rank their predisposition on the 12 items according to a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) values assigned to reverse grade questions were subtracted. The maximum and minimum values that can be reached by completing the CSE are, respectively, +24 and -24, with a neutral point at 0. Similar to Cristofaro et al.(2020), thanks to the STATA function called 'egen' 1, it was possible to derive three main clusters according to the average CSE value of managers: (i) low CSE managers (whose averages range from -24 to -9), (ii) average CSE managers (whose averages range from -8 to +8), and (iii) high CSE managers (whose averages range from +9 to +24). Thanks to the implementation of this STATA function, the initial sample of 93 managers was reallocated in the aforementioned three clusters, equating to 31 individuals each.

Self-leadership: Self-leadership was measured with the Revised Self-leadership Questionnaire developed by Houghton and Neck(2002) consisting of 35 items, which refer to their own behavior while at work (they established reliability equal to 0.74 and construct validity). The definition and items are also shown in Appendix B. All items were measured using a five-point Likert scale: 1 = definitely not true, 2 = not true, 3 = neither true nor untrue, 4 = true, and 5 = definitely true. Also in this case, the 'egen' STATA function² was implemented in order to derive three main clusters based on the average self-leadership value of managers: (i) low self-leadership managers (whose averages range from 35 to 81), (ii) average self-leadership managers (whose averages range from 82 to 128), and (iii) high self-leadership managers (whose averages range from 129 to 175). The initial sample of 93 managers was reallocated in the previously mentioned three clusters, which in this case also equate to 31 individuals each.

Managerial task: in order to track the internal or external attribution of performance by managers, a managerial task has been administered to participants. In particular, the dynamic multi-step business case developed by Cristofaro(2016) was adopted face validation and the inter-rater agreement were found to be very positive (Kappa = 0.91 ($p < 0.001$), 95%), while test-retest showed a correlation equal to 0.79. The managerial task substantiated by the dynamic multi-step business case consisted of the following: a respondent appointed as Chief Executive Officer (CEO) of a leading manufacturing firm in the Italian clothes market, who was going to meet CEOs of the three main competitors at the industry's annual meeting. Before the meeting, the CEO was provided with the last-quarter's financial statement. In contrast to the high level of appreciation among customers, their own firm showed bad performance in terms of revenues and the first cue given to the CEO was that maybe some of the other firms had applied unfair business practices that led them to gain higher revenues at the expense of their own firm. Participants were asked to identify, through answers to a series of investigative questions, where the bad revenue performance must have been ascribed to their own firm or to the unfair business practices of other enterprises. The best performers, in this particular case, are those who after collecting disconfirming cues about unfair business practices, arrived at the conclusions that further investigation would have been needed on the efficacy of their own marketing and sales strategy; this is called 'adaptive behavior'. All the other potential behaviors (i) fixed: stuck at investigating just one firm and concluded the case accusing a competitor's CEO of unfair business practices, (ii) vagabonding: investigating the business practices of different

firms but at the end of the case having accused a competitor of unfair business practices, and (iii) stalled: investigating different competitors’ business practices and then being unable to formulate a solution hypothesis to the problem and appointing the general manager to make the decision were considered as being ‘failures’. At the end of the task, participants were advised of their behavior and the Self-attribution bias questionnaire was administered.

Self-attribution bias: In line with Libby and Rennekamp(2012), four responses from each participant were collected aimed at measuring relative weighting on internal attributions (i.e., skill and effort) versus external attributions (i.e., luck and difficulty) for the above described managerial task. The 93 managers involved were asked to provide ratings on four 9-point bipolar scales, each one aimed at discovering the attitude towards internal attribution of performance against an external attribution (i.e., Luck vs. Skill, Difficulty vs. Effort, Difficulty vs. Skill, and Luck vs. Effort). A high value (the highest value is 36) indicates greater internal attribution, while a low value (the lowest value is 4) indicates a greater external attribution. According to Libby and Rennekamp(2012), if managers are biased, “those who believe that they performed relatively well (poorly) should be more likely to attribute their performance to internal (external) factors. Furthermore those who perform well and attribute the performance to internal factors should be more confident about their future performance (p. 209).

Data analysis: To test the two developed hypotheses, in line with similar works (Cristofaro et al. 2020), the authors conducted two one-way Analysis of Variance (ANOVA). This is the most suitable statistical technique that can be used in order to compare the means of two or more samples to find significant differences, if there are any (Field2013).

5. RESULTS

5.1. Results for Research Question 1

To identify whether managers with high CSE have greater self-leadership compared to individuals with low and average CSE (H1), a one-way ANOVA was implemented considering the different CSE clusters (low, average, high), and their results on the RSLQ. This test helps to answer research question 1: “How is self-leadership related with CSE?”.

Table1shows the results of this test: there is a statistically significant difference between groups as determined by the one-way ANOVA ($F(2,90) = 75.342, p = 0.000$). Then, a Tukey post hoc test

(see Table2) revealed that managers with high CSE have greater self-leadership compared to individuals with a low rating (+6.1; $p = 0.00$) and average CSE (+4.9; $p = 0.00$). So, H1 was verified. Moreover, apart from the relationships just highlighted, it can be derived from Table2that: (i) managers with average CSE have greater self-leadership compared to individuals with a low rating (+2.6; $p = 0.00$), but lower than self-leadership managers with high CSE (-4.9; $p = 0.00$); and (ii) managers with low CSE have lower self-leadership compared to both individuals with an average rating (+2.6; $p = 0.00$) and high CSE (-6.1; $p = 0.00$).

Table 1. ANOVA Table Core personality traits substantiating self-evaluation (CSE) on self-leadership.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	98.433	2	48.673	75.342	0.000
Within Groups	16.112	90	0.522		
Total	114.555	92			

Table 2. Post-hoc test CSE on self-leadership.

(I) CSE	(J) CSE	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low CSE	Average CSE	-2.60000 *	0.3135	0.000	-11.232	-1.888
	High CSE	-6.10000 *	0.3135	0.000	-14.654	-3.034
Average CSE	Low CSE	2.60000 *	0.3135	0.000	1.888	11.232
	High CSE	4.90000 *	0.3135	0.000	23.819	1.181
High CSE	Low CSE	6.10000 *	0.3135	0.000	3.034	14.654
	Average CSE	4.90000 *	0.3135	0.000	1.181	23.819

* The mean difference is significant at the 0.05 level.

5.2. Results for Research Question 2

A second one-way ANOVA was conducted in order to verify whether individuals with high self-leadership are more inclined to be victims of the SSB compared to executives with low and average self-leadership (H2). This test helps to answer research question 2: “How does self-leadership influence the attribution of successes/failures?”. In doing that, the authors considered the different self-leadership (SL) clusters (low, average, high) and their average answers to the SSB questionnaire of Libby and Rennekamp(2012).

As reported in Table3, there was a statistically significant difference between groups as determined by the one-way ANOVA ($F(2,90) = 222.176, p = 0.000$). As with H1, in this case also a Tukey post hoc test (shown in Table4) followed the ANOVA; this second analysis showed that managers with high self-leadership were more inclined to fall into the SSB compared to managers with average self-leadership (+9 points of self-attribution compared with them; $p = 0.00$) and low self-leadership (+17 points of self-attribution compared with them; $p = 0.00$). In other words, executives with high self-leadership had the tendency to attribute performance internally when they are positive and to attribute performance externally when they are negative. So, H2 was verified.

Table 3. ANOVA Table self-leadership on SSB.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.320	2	2.280	222.176	0.000
Within Groups	0.109	90	5.321		
Total	3.429	92			

Table 4. Post-hoc test CSE on Self-Serving Bias (SSB).

(I) SL	(J) SL	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low SL	Average SL	7.000 ^a	1187.12	0.612	12.112	2.433
	High SL	17.000 *	1187.12	0.000	23.443	13.657
Average SL	Low SL	7.000	1187.12	0.612	2.433	12.112
	High SL	9.000*	1187.12	0.000	10.677	7.432
High SL	Low SL	17.000 *	1187.12	0.000	13.657	23.443
	Average SL	9.000 *	1187.12	0.000	7.432	10.677

* The mean difference is significant at the 0.05 level.

6. DISCUSSION AND IMPLICATIONS

This work attempts to enrich, respectively, the established and nascent debates on the following relationships: (i) self-leadership and personality traits, and (ii) self-leadership and decision making. In particular, this work explores how self-leadership is related with the evaluation of core personality traits substantiating self-evaluation (CSE), and how self-leadership leads to cognitive errors in managerial decision making this work has also considered the Self-Serving Bias (SSB). In fact, this paper tries to answer the following two research questions: “How is self-leadership related with CSE?” and “How does self-leadership influence the attribution of successes/failures?”. In order to do so, the investigation included the testing of three variables: CSE, self-leadership, and Self-Serving Bias (SSB). Accordingly, two hypotheses were developed and tested through two one-way ANOVAs: (1) individuals with high CSE have greater self-leadership compared to individuals with low and average CSE; and (2) individuals with great self-leadership are more inclined to be victims of the self-serving bias compared to individuals with low and average CSE.

The outcomes of the ANOVAs fully confirmed our two hypotheses. In fact, they showed that CSE powerfully affects self-leadership: the higher the evaluation of the self, the greater the self-leadership behavior characterizing the decision makers. This scenario, in line with prior literature on CSE (Hollenbeck et al.1988;Judge et al.1998;Judge and Bono2001;Silvester et al.2002), establishes that decision makers with a high degree of CSE are, in the long run, likely to retain efforts towards their ambitions with remarkable consequences in their working experience, remuneration and social prestige (Cristofaro2017b). Thanks to the result emerging from the test of the first hypothesis, the self-leadership literature is advanced and enhanced with regard to the relationship with self-efficacy. Indeed, prior literature found that self-leadership, thanks to the adopted strategies, influences self-efficacy as demonstrated by Latham and Latham and Frayne(1989),Prussia et al.(1998), and Saks and Ashforth (1996). To that, we add that self-leadership is basically influenced by the self-efficacy trait because this is one of the four pillars of the CSE construct (Cristofaro et al.2020). In practice, a high self-efficacy trait leads to an increase in self-leadership that, in turn, increases self-efficacy in a co-evolutionary fashion.

Thanks to this result, the self-leadership literature focusing on the influence of personality traits is strengthened. For example Williams et al.(1995) and Williams(1997) have proved a meaningful correlation between the judgment (planful and organized) and sensing (precise and practical) traits and self-leadership; also Stewart Greg L. and Cardy(1996) indicated a significant level of correlation ($p < 0.01$) between conscientiousness and the self-leadership attitude, which is also confirmed by

Houghton et al.(2004), who also found a positive relation between self-leadership and extraversion. Thus, in summarizing, we want to underline the fact that it is evident how CSE represents a powerful trait in order to influence the personality that, consequently, affects the self-leadership attitude both on the personal and professional sides. From that, it emerges that CSE is a personality trait that works as an antecedent of self-leadership, reinforcing by studying a personality trait that has not been ever considered in self-leadership literature the assumption that: “self-leadership represents a unique constellation of strategies that are founded upon, related to, and yet distinct from these various theories as well as from various personality traits” (Neck and Houghton2006, p. 275).

Of course, the reinforcing co-evolutionary mechanism that has been advanced can lead to a vicious cycle in which the self-leadership behavior of people with high CSE brings, in turn, a very high self-efficacy (Hiller and Hambrick2005); this too strong belief in an individual’s own capabilities can lead to falling into cognitive biases.

In this regard, results of the test of the second hypothesis have shown that individuals with strong self-leadership are more likely to be victim of SSB. This happens because people with strong self-leadership continuously look to establish, preserve, and augment their positive self-image (Kwan et al.2004). From this result, it is possible to argue that those who pursue, even if indirectly, behaving in a way aimed at reaching laudatory outcomes are likely to attribute successes internally and attribute failures externally, in line with what was previously supposed by several scholars, such as Silver et al.(1995), Campbell and Campbell and Sedikides(1999),Alicke and Sedikides(2009), and Sedikides and Alicke(2012). This result reinforces the stream of studies that advanced self-efficacy one of the

four pillars of CSE, has a negative facet due to conducting cognitive errors see (Powers1973,1991) in contrast with the works of Bandura(1986,1997;Bandura et al.1999) that assumed a positive influence of self-efficacy on task performance. Indeed Vancouver et al.(2002), through two laboratory experiments with 87 and 104 undergraduates, respectively, found that self-efficacy has a negative influence on performance, explained by the fact that self-efficacy leads to the cognitive error of overconfidence, which increases the likelihood of committing logic errors during tasks. However, in the proposed contribution, the link between CSE, self-leadership SSB and task performance has not been considered; so, self-efficacy is supposed as a ‘negative’ influence of high self-leadership because it leads to a cognitive error substantiated by the SSB without due consideration of task performance. However other works suggested that people with an optimistic explanatory style, oriented to the external attribution of failures, can perform better than people with a pessimistic explanatory style, who make internal attributes of failures (Gillham et al.2001). From that, future research can expand the results of this work to try to also measure the task performance of individuals present in the sample.

Regarding the originality of this work and its added value, this is the first paper to the best of the authors’ knowledge on the relationship between CSE and self-leadership with regard to decision making in general, and with cognitive biases in particular. The new advanced relationships between self-leadership and CSE, as well as self-leadership and SSB, give us the opportunity to forecast the consequences deriving from managers’ personality traits and, in turn, the behavior of decision makers. In doing that, this study strengthens what has been recently discovered by Cristofaro et al.(2020) with regard to the relationship between CSE and decision making. In particular, these scholars pointed out that teams characterized by a large degree of CSE are more inclined towards both average and low CSE and risk tumbling into the overconfidence bias. Their analysis is entirely supported by past research in this area, highlighting how teams characterized by a large degree of CSE misjudge their skills, tending to bias the decision-making process (Abatecola et al.2018;Abatecola and Cristofaro2019). In brief, this paper also advances the research on CSE and managerial decision making, adding results to the stream of research that perceives this complex personality trait as not always desirable for managerial decision-making processes. From this speculation and from the discovered relationships, some future research questions arise: Are there other biases activated by the presence of high or low self-leadership of managers? What is the threshold level at which self-leadership passes from having a positive influence to a negative one in managerial decision-making processes? These questions represent just a few examples of the large scale of the sphere of application of self-leadership in managerial decision making.

According to the disclosed results, we can also derive some meaningful managerial implications. Leaders and human resource managers should be aware that managers with a high level of CSE are also likely to have high self-leadership and may fall into cognitive biases. So, it is suggested that the CSE level of managers within organizations should be monitored, in order to have the opportunity to judiciously create the best firm architecture possible to reduce the presence of cognitive biases and reach superior decisional and organizational

results. In addition, to take control of the influences of high CSE and self-leadership, it is also suggested to improve the quantity and quality of controls of the decision-making process; this can be done through the post-implementation, with regard to decision-making processes, of the quality control checklist advanced by Kahneman et al. (2011). The checklist is a 12-item questionnaire in which each question posed to decision makers is aimed at identifying before making an important decision the occurrence of a cognitive bias within decision-making processes (Cristofaro 2017c). Moreover, managers of organizations should be aware of the fact that high self-leadership can lead to dysfunctional effects, such as falling into cognitive biases; according to that, training programs aimed at improving the self-leadership of managers should also show the counter value of high self-leadership. However, it is also true that, under some circumstances, biases can lead to results and performances that are greater than the ones reached through the use of other 'more rational' decision-making tools (e.g., inferential statistics) (Gigerenzer and Todd 1999; Luan et al. 2019). Hence, if biases occur within decision-making processes due to the personal characteristics of decision makers, they should be individually assessed in relation to the performed task to identify if their occurrence was totally negative or not.

Despite the accuracy with which this research has been conducted, it suffers from several limitations. First, the test was based on a limited sample population of 93 managers; thus, for future research, it is suggested to use a larger sample and, especially, to extract it from a population coming from different countries in order to be able to study, through a cross cultural analysis, the possible fluctuation of the interaction among CSE, self-leadership, and cognitive biases. Secondly, the 93 managers were asked to complete questionnaires to show their CSE, self-leadership and SSB tendencies; even if questionnaires are widely recognized as a valid and reliable measure if thoroughly developed scientifically they are always based on self-reporting mechanisms. For future investigations, it is suggested verifying CSE, self-leadership, and cognitive biases relationships through direct observations of the behaviors of managers in real job contexts. Another limitation of this study, stemming from the terms and conditions of the use of Amazon Mechanical Turk in selecting the sample of respondents, lies in not having known in which sector and organizations the sample managers work, as well as not knowing their specific positions. Future research should use less virtually mediated sampling methods so that these sample features are collected. All these limitations represent good starting points for future investigations in order to have a clearer picture of the relationships among CSE, self-leadership, and cognitive biases.

To conclude, the innovative feature of this paper is represented by the previously unexplored trilateral connection between CSE, self-efficacy, and self-leadership; thus, it not only covers the relation between self-leadership and cognitive biases, but also the more general link between self-leadership and managerial decision-making processes.

Appendix A: Core-Self Evaluation Scale

1. I am confident I get the success I deserve in life.
2. Sometimes I feel depressed. (reverse grade)
3. When I try, I generally succeed.
4. Sometimes when I fail, I feel worthless. (reverse grade)
5. I complete tasks successfully.
6. Sometimes I do not feel in control of my work. (reverse grade)
7. Overall, I am satisfied with myself.
8. I am filled with doubts about my competence. (reverse grade)
9. I determine what will happen in my life.
10. I do not feel in control of my success in my career. (reverse grade)
11. I am capable of coping with most of my problems.
12. There are times when things look pretty bleak and hopeless to me. (reverse grade)

Appendix B Self-Leadership Scale by Houghton and Neck (2002)

1. I use my imagination to picture myself performing well on important tasks.
2. I establish specific goals for my own performance.
3. Sometimes I find I'm talking to myself (out loud or in my head) to help me deal with difficult

- problems I face.
4. When I do an assignment especially well, I like to treat myself to something or an activity I especially enjoy.
 5. I think about my own beliefs and assumptions whenever I encounter a difficult situation.
 6. I tend to get down in my mind when I have performed poorly.
 7. I make a point to keep track of how well I'm doing at work (school).
 8. I focus my thinking on the pleasant rather than the unpleasant aspects of my job (school) activities.
 9. I use written notes to remind myself of what I need to accomplish.
 10. I visualize myself successfully performing a task before I do it.
 11. I consciously have goals in mind for my work efforts.
 12. Sometimes I talk to myself (out loud or in my head) to work through difficult situations.
 13. When I do something well, I reward myself with a special event such as a good dinner, movie, shopping trip, etc.
 14. I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with.
 15. I tend to be tough on myself in my thinking when I have not done well on a task.
 16. I am usually aware of how well I'm doing as I perform an activity.
 17. I try to surround myself with objects and people that bring out my desirable behaviors.
 18. I use concrete reminders (e.g., notes and lists) to help me focus on things I need to accomplish.
 19. Sometimes I picture in my mind a successful performance before I actually do a task.
 20. I work toward specific goals I have set for myself.
 21. When I'm in difficult situations, I will sometimes talk to myself (out loud or in my head) to help me get through it.
 22. When I have successfully completed a task, I often reward myself with something I like.
 23. I openly articulate and evaluate my own assumptions when I have a disagreement with someone else.
 24. I feel guilt when I perform a task poorly.
 25. I pay attention to how well I'm doing in my work.
 26. When I have a choice, I try to do my work in ways that I enjoy rather than just trying to get it over with.
 27. I purposefully visualize myself overcoming the challenges I face.
 28. I think about the goals that I intend to achieve in the future.
 29. I think about and evaluate the beliefs and assumptions I hold.
 30. I sometimes openly express displeasure with myself when I have not done well.
 31. I keep track of my progress on projects I'm working on.
 32. I seek out activities in my work that I enjoy doing.
 33. I often mentally rehearse the way I plan to deal with a challenge before I actually face the challenge.
 34. I write specific goals for my own performance.
 35. I find my own favorite ways to get things done.

Conflicts of Interest:

The authors declare no conflict of interest.

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