

The One Man Show: Experimental Evidence for the Impact of Joint Decision-making on Overconfidence

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Objective

Some of the most disastrous events in human history are connected to overconfidence, a cognitive bias defined by a miscalibrated risk adjustment and an overestimation of one's capability to alter any given outcome (Grubb, 2015; Johnson, 2009; Lichtenstein et al., 1977a). The two core meltdowns of the nuclear power plants in Chernobyl and Fukushima are prominent examples that have been associated with the bias (Piehlmaier, 2013; Song & Kim, 2014). Research shows that overconfidence spans across cultures, professions, and socioeconomic milieus (Fuchs et al., 1998; Oskamp, 1965; Svenson, 1981; Yates et al., 1996). Its influence is especially pronounced in situations of uncertainty and whenever direct feedback is unavailable (Arkes et al., 1987). Consequently, investors are of special interest to research on overconfidence because financial markets are characterized by risk and uncertainty. Similarly, investors have a monetary incentive to optimize their returns without being plagued by a distorted judgment. In a well-known empirical study, Barber and Odean (2001) describe the difference in financial decision-making between female and male investors. They suggest that men exhibit significantly more inflated confidence in their judgments than women. This, in turn, leads to excessive trade which substantially decreases their returns.

However, little attention has been given to the constituents of choice. That is, the fact that the primary investment account holder is male or female does not mean that this person makes his or her decision isolated from others. Partners, family members, friends, or brokers can be involved in the chain of events that leads to a decision. The call to hold, sell, or buy is the observable outcome but overconfidence affects the process itself. The proposed study sheds light on the connection between isolated decision-making and overconfidence in a randomized controlled setting. We recruited 122 college students from the School of Human Ecology at the University of Wisconsin- Madison in order to test whether an unrelated teamwork task decreases their overconfidence level compared to those who finish the task on their own. The novel manipulation involved a common work-related project that needs to be handled with the perceived help of another person while the control group was asked to independently provide an answer. To the best of our knowledge, there is no other study using a randomized controlled trial that focuses on the impact of shared vs isolated decision-making on overconfidence. This research project addresses the following research question: Does perceived joint decision-making decrease investor overconfidence?

Significance

Decision making is an integral part of life. While most situations may not require much cognitive capacity, judgments under uncertainty are mentally more demanding. A large set of possible outcomes needs to be considered and adjusted according to a rapidly changing environment. However, evolution gave us the ability to expand our feasibility set by coordinating and cooperating with others. Human interaction and social networks enable us to profit from knowledge and skills of others (Harvey & Fischer, 1997). Nevertheless, there is risk involved, e.g. through deception, retaliation, or self-interests, which is why people are more inclined to consider advice from individuals with close relational ties (McDonald & Westphal, 2003). That being said, isolated decision making is a common occurrence even if support from close friends, coworkers, and family would be readily available (See et

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al., 2011). Consequently, one may ask what characterizes a sole decision maker, i.e. a person who is less likely to consult others in a situation of uncertainty? While there are many possible explanations, everything else being equal, people with more advanced metaknowledge are considerably more likely to successfully seek advice, support, or guidance (Gruenfeld et al., 1996; Wittenbaum & Stasser, 1996). Metaknowledge is a primary-level indicator on how to acquire, categorize, and process knowledge. Evan and Foster (2011) describe the concept as “*knowledge about knowledge*”. It helps us to acknowledge the boundaries of our own capacities (Russo & Schoemaker, 1992).

Metaknowledge is closely connected to overconfidence, a concept that is characterized by a combination of a systematic underestimation of the role of risk and ambiguity and/or an overestimation of one’s capabilities (Lichtenstein et al., 1977b, pp. iii–iv). Despite the fact that, for years, the bias has been of special interest to finance-related literature, little is known about the causality between isolated vs joint decision-making and investor overconfidence (Barber & Odean, 2001; Shiller, 2015, p. 172). This is especially troubling because excessively confident investors overestimate their impact on the financial market and fall prey to an illusion of control (Langer, 1975). In addition, more recent findings suggest that greater power and inflated confidence lead to less advice taking behavior (See et al., 2011). This implies that overconfident investors have a higher chance to make suboptimal financial decisions and are less likely to take advice from others. Furthermore, they exhibit more pronounced self-serving traits which lead them to reject information or advice whenever it is conflicting with their own perception (Babcock & Loewenstein, 1997).

In a prior study, we analyzed the data of 2,000 investors who held assets in nonretirement funds and found evidence that primary decision-makers who do not share financial decisions with members of their household or with a professional advisor, exhibit significantly higher levels of overconfidence compared to their more interactive counterparts. However, the cross-sectional dataset lacks appropriate instrumental variables which is why no causal claim can be made. Consequently, the randomized controlled study closes this gap by collecting data from the same subpopulation in order to draw clear implications regarding the directional impact of shared vs isolated decision-making on inflated confidence. We hypothesized that investors who face a teamwork task (clinical group) exhibit significantly lower levels of overconfidence compared to those who had to solve the task on their own. The next section describes the experimental setup in greater detail.

Method

One hundred twenty-two undergraduate students (62.6% female; median age=21 with 1.87 SD) from the School of Human Ecology at the University of Wisconsin-Madison were recruited for this study. All participants were randomly assigned to either the clinical or the control arm. The double-blind randomization was executed by Qualtrics’ random number generator. Incentives were given in the form of course credits. After consenting to the study, subjects were prompted with a task description. The clinical group faced the following narrative:

“Your team is responsible to make travel arrangements for a business partner who will visit your branch office next month. The person will arrive around noontime at the airport in city A which is located approximately 139 miles south of your office in city B. There are two convenient modes of transportation: an intercity bus and a non-stop train connection. Both are equally comfortable with state-of-the-art WiFi and business class seats. Ticket prices for buses and trains are standardized at \$35. Both modes of transportation leave every 45 minutes directly from the airport and arrive approximately 2.5 hours later in city B.

You will work with another participant to decide whether to book the train or the bus.”

This prompt was slightly altered for the control group and started with “*You are responsible...*”. Similarly, it ended with “*You have to decide whether to book the train or the bus.*” After that, the clinical group saw an interactive “*typing bubble*” while controls faced a loading sign. Both were timed at 4 seconds before treated participants received a response that was perceived to come from another participant. However, in order to ensure privacy for all subjects, the response was a random draw from the set of feasible choices, i.e. bus or train ticket. The control group was prompted by “*You can either book an intercity bus ticket or a non-stop train pass*” before both groups faced a forced-choice response to either book the train or the bus ticket. The order of these two items was randomized.

The following block consisted of the confidence measure (“*On a scale from 1 to 7, where 1 means*

very low and 7 means very high, how would you assess your overall knowledge about investing?") as well of 10 common financial literacy questions of the type "If a company files for bankruptcy, which of the following securities is most at risk of becoming virtually worthless? 1. The company's preferred stock, 2. The company's common stock, 3. The company's bonds, 4. Don't know". A complete list of these questions can be found in Lin et al. (2016, p. 17). These items mirror the aforementioned cross-sectional dataset in order to achieve comparability between these two studies. The final block consisted of general demographics.

Results

An unpaired t-test is used to compare the impact of the treatment to the non-treated group. The randomization process theoretically guarantees independent and identically distributed (iid) samples for the variables of interest. Levene's (1961) test is applied to examine a potential homogeneity of variance. Welch's (1947) approximation was utilized to guarantee robustness against unequal variances in case the test successfully rejected homogeneity. The results suggest a successful manipulation. Male participants are significantly less overconfident if they experienced a perceived interaction (clin) ($n_{con}=20$, $mean_{con}=0.265$, $SE_{con}=0.4215$; $n_{clin}=22$, $mean_{clin}=-0.932$, $SE_{clin}=0.4434$; $p<0.03$). The reverse is true for women ($n_{con}=32$, $mean_{con}=1.2625$, $SE_{con}=0.261$; $n_{clin}=40$, $mean_{clin}=1.88$, $SE_{clin}=0.3291$; $p\leq 0.08$). Generally, women are much more overconfident than men ($p<0.001$). These results indicate that the common perception regarding the impact of gender on overconfidence needs to be revised. Joint decision-making has a substantially different effect on men than it has on women. A possible explanation is that women may feel more comfortable to make decisions under uncertainty in the presence of perceived interaction. This may boost their confidence beyond levels that are objectively justifiable. We are currently conducting a second experiment to further explore this aspect. Generally, our findings have clear indications for financial planners and their clients on how to set up an effective interaction in order to decrease investor overconfidence. Similarly, male investors may profit from reduced levels of overconfidence if they seek shared decision-making within their household.

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